

BUTANE-PROPANE *News*

Headquarters for L.P. gas Information Since 1931

AUGUST, 1954

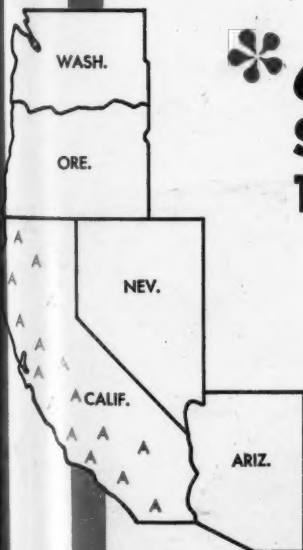
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TECHNOLOGY

Our hats are off . . .
to District 5



**65.95% L.P.G.
Sales Growth Since
1947 . . .**

ANCHOR

HAD A BIG SHARE IN THAT GROWTH

Since the establishment of Anchor's first West Coast Office in 1947 we have opened twelve additional distributing points to serve the vastly expanding market.

To the alert dealers who have been responsible for this phenomenal growth through their excellence of service and selling we offer our congratulations and thanks. We pledge the continued support of all our extensive transportation, storage and engineering facilities to help you keep up the good work.

ANCHOR

PETROLEUM CO. TULSA

SALES OFFICES: Des Moines • Shreveport
Houston • Long Beach • Oklahoma City
Toledo • Westfield, Mass. • Midland, Texas

294,299 — 1947
446,246 — 1952

Bureau of Mines Figures in Thousands
of Gallons. 1952 figures are latest
which have been compiled.





When you ask yourself about
LP-Gas systems, you
may come up with...

QUESTIONS LIKE THESE:

Will they be easy to service? Hackney LP-Gas Systems are designed for fast, easy servicing—with fittings mounted on the shoulder or end of the tank.

How are they for looks? You'll be proud to install good-looking Hackney Systems. Welds are always smooth and uniform. One-piece streamlined domes harmonize with tank contours... have no seams where rust can start... are extra heavy for complete valve protection.

Are they ready to use on arrival? Hackney Systems are furnished complete with quality fittings—are thoroughly cleaned and dried—are painted with a tough, long-lasting coating.

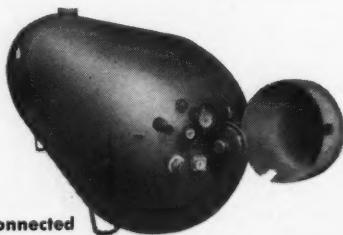
Have they been fully tested? Hackney Systems are made in full accordance with ASME codes and

NBFU regulations—are listed by UL. Welds are X-ray controlled for soundness and uniformity. Carefully inspected. Hydrostatically tested.

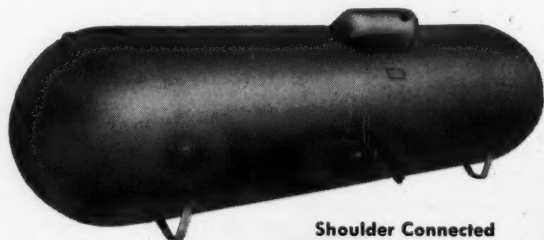
Can I get just the size I need? Hackney standard sizes are 250, 499, 640, 855, 995, 1135, 1199, 1745, 2550 and 3360 gallons. Can also furnish other sizes to meet your needs.

Whose reputation stands behind these systems?

Hackney LP-Gas Systems are another product of Pressed Steel Tank Company—makers of famous Hackney LP-Gas cylinders. They're designed and built to meet your needs for long-lasting, easy-to-service, economical-to-maintain systems. Write for further details.



End Connected



Shoulder Connected

Pressed Steel Tank Company

Manufacturer of Hackney Products

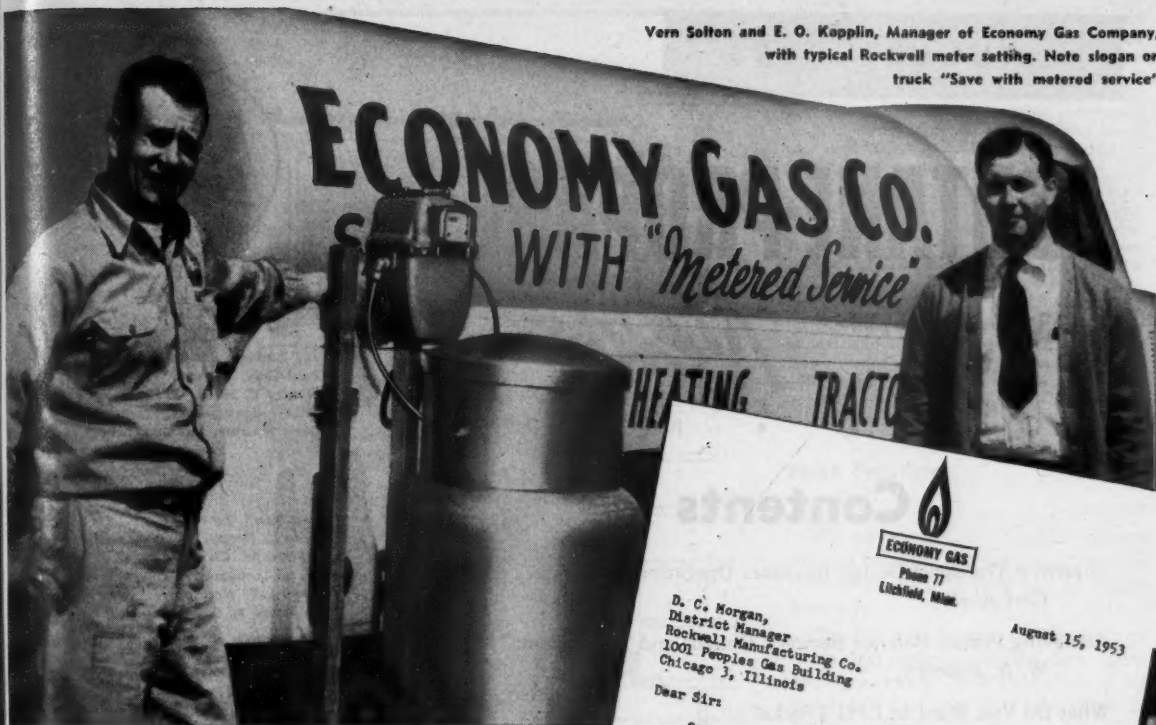
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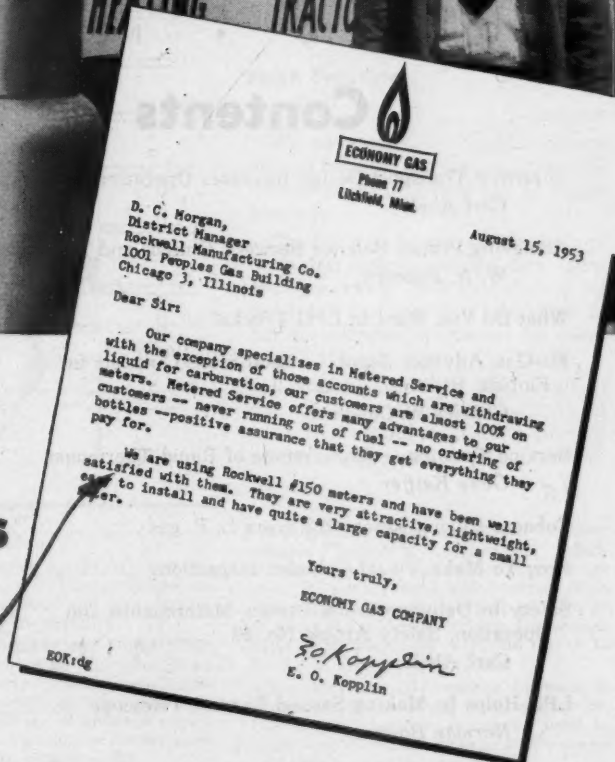
LP-GAS CONTAINERS FROM ONE POUND TO 30,000 GALLONS



Vern Solton and E. O. Kopplin, Manager of Economy Gas Company,
with typical Rockwell meter setting. Note slogan on
truck "Save with metered service"



"We are using
ROCKWELL
LP-Gas Meters
and have been
WELL SATISFIED
with them"



So says E. O. Kopplin, who has built his business around metered service. His letter tells the story of meter advantages in a nutshell . . . and it voices approval of the one meter especially designed for LP-gas.

You, too, will measure better, serve better and profit more when you turn to Rockwell LP-gas meters. Let these little meters do a big job for you. Get full facts otday. Write for catalog and price list.

Lloyd Peterson, Economy Gas Company employee, checks reading on Rockwell LP-gas meter.

YOU CAN RELY



ON ROCKWELL

ROCKWELL
MANUFACTURING COMPANY

BIRMINGHAM, S. P. A., Atlanta Boston Chicago Houston Los Angeles
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AUGUST 1954

BUTANE-PROPANE

NBP

News

VOLUME 16 • NUMBER 8

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Headquarters for L.P. gas Information



Budget Plan

Alabama

A great deal of L. P. gas is used for heating purposes here. This imposes a seasonable peak expense on the user who sometimes finds it hard to meet in a lump.

Do you know of any budgeting plan which has been developed by any L. P. gas operator to spread this cost over the 12 months, something like a Christmas savings account?

E. M. G.

We have been trying to recall just which companies to our knowledge have adopted budgeting plans for customers to level out the billing peaks, but have had no luck. We do know it's done, particularly in the Northern and Northeast areas. It's also a fairly common practice among gas utilities.

The usual method is to total up an average load for a year and divide by 12, and to set up classes of customers according to usage. That is, since it is obviously impossible to establish a separate rate for each customer; a rate that is based on number of appliances or some other factor may be used.

At the end of a billing period, the total budgeted payments would have to be set off against the actual cost of fuel used, and an adjustment made accordingly. It's probably easier to schedule this adjust-

ment for an off-peak month. It's our recollection that some utilities pro-rate on about an 8-month basis, and pick up the differences during the summer.

It's well to remember two things: The pro-rated rates should be high enough so that the adjustment will not cause a hardship for the customer, and the customer should be given plenty of advance notice of the new system as well as an opportunity to reject it if he so desires.—Ed.

Range Casters

Washington

We have a request from a motel operator for some sort of a decal or metal plate that can be attached to the oven control or panel instructing the user just how to light the oven, as a safety precaution. Do you know of such an item on the market or where we can get them?

Also would like to know if you could tell us where we could get some range casters for ranges on display so they can be moved around easier. We heard that some company had these and they fit where the stove crating bolts are removed.

G.G.

The Bassick Co., Austin St., Bridgeport, Conn., manufactures a triangular caster dollie especially for desks, stoves, refrigerators, etc., where a permanent caster is not required. It is their No. 505. They can probably advise where it can be purchased in your area. One or more of the large pipe and tool supply houses at Seattle or Spokane may carry them.

The Faultless Caster Corp., 1943 Clarence St., Evansville 7, Ind., manufactures a line of casters, one of which has a threaded stem which could be bolted to the stove as you described. However, data on the caster indicates it is threaded for a ¼-in. pipe connection.

Regarding the decal that you would like to use on your oven control or panel, we do not know of anything of this type available at the present time.—Ed.

Heat Treating

Indiana

We have recently bought a business in Indiana, and we are primarily concerned with furnace and L. P. gas business.

We have a concern here in our town that makes tools and dies. They are now using 2000 gal. of fuel oil per week and they are interested in finding out what we can do for them with L. P. gas.

I would appreciate very much if you would send any information you have that would help us to present an intelligent report to this prospect.

C.R.M.

We are forwarding one of our booklets entitled "Industrial Applications," which includes several articles describing the use of L. P. gas for industrial heating. Two articles in particular written by George W. Gray of the Verkamp Corp., Cincinnati, Ohio, deal specifically with the use of L. P. gas in heat treating plants.

The tool and die making business is dependent on good heat treating practice. Gas is ideal because it can be used to apply heat to limited areas or entire pieces and obtain exacting results.

You did not include any comparative fuel price figures in your letter, but it does not matter as the cost of fuel alone for specialty work such as your client performs is secondary. The quality of work which can be obtained with gas and the efficiency with which the heating process can be accomplished will generally offset the difference in fuel cost many times.

If your client has had previous experience in processing his work with manufactured (city gas) or with natural gas, then you can assure him that L. P. gas will provide equally good results. L. P. gas is a gaseous fuel as it is burned and responds to the same precise control and application that is obtained with other gaseous fuels.

We believe your client will save money in the long run with L. P. gas because:

1. Better heat treatment control will produce a better product.
2. Better control of flame and temperature will produce fewer rejects with the consequent loss of labor and materials used to make the rejected products.

SUPERIOR TANKS NOW TOPS IN THE EAST

AS WELL AS
THE WEST

NATIONWIDE
SERVICE THROUGH
FRUEHAUF TRAILER CO.

You may now purchase Superior Tanks through local Fruehauf representatives located throughout America. Your local Fruehauf office will handle all details such as individual designs to fit your specific requirements.



E. Brooke Matlack, PHILADELPHIA, PA.,

ORDERS THIS SUPERIOR TANK THROUGH FRUEHAUF TRAILER CO.

Fruehauf and Superior teamed up to produce this and four other Integral semi-trailer tanks to provide the *maximum* possible payload demanded by the large-scale operations of E. Brooke Matlack. It has 8300 gross water-gallon capacity, 80" O.D. x 35' long... X-rayed and stress-relieved... fabricated according to 1952 ASME Code for 250-lb. working pressure.

Superior frameless design eliminates dead weight, increases maneuverability and gives greater and more profitable payload.

Our technical and engineering staff is at your disposal to help you solve your particular transport problem. There is no obligation, of course, for preliminary designs and estimates.

Call Superior Today!



**SUPERIOR TANK AND
CONSTRUCTION COMPANY**

6155 SO. EASTERN AVE. • LOS ANGELES 22, CALIF. • RAYmond 3-1151

3. Controlled heat treatment of limited areas on a piece of equipment saves fuel because the entire piece does not need to be heated.

4. Controlled heat treatment of limited areas often provides a better product.

5. Closer control of flame and temperature reduces furnace maintenance.

6. Closer control of furnace atmospheres without providing special atmosphere furnaces. It will be found that the gas flames and excess air can be controlled so well that many products can be heat treated in the products of combustion from the L. P. gas flame, where they formerly had to be placed in a compartment containing a special prepared atmosphere when oil was used in order to heat treat them.

7. Sealing can be reduced with gas with consequent reduction of waste. It also permits machining to close tolerances before heat treating.

The above are some of the advantages of gas in a tool and die business that requires much heating and heat treating work. Even if your client does not go all the way at first we are sure a start will sell gas along the line and its use will grow.

However, try to have him equip his furnaces with good burners and control devices including safety controls.

We published an article in the January and February, 1950, issue of *Butane-Propane News* entitled "Sell Safe Practices to Small Industries," which may be helpful to you and your client. Tear sheets of these articles are enclosed.—Ed.

Plastic Flasks

England

I would be greatly obliged if you could let me know whether any American manufacturer of vessels for butane and propane is at present using or contemplating the use of flasks made of plastics.

I am trying to ascertain whether any practical or development work is being carried out in America on the problem of application of plastics for this purpose. The flasks should have a capacity of about 7 litres.

E.G.

We do not know of any American manufacturer producing plastic flasks for use with butane and propane.

In view of the severe requirements for strength in these vessels, it does not seem likely that anything but high grade steel can come up to specifications.—Ed.

Use Automatic Regulator

Pennsylvania

I want to install a conversion gas burner in my furnace and, as you probably know, there is a regulator or reducing valve on the unit.

In order to make this a propane automatic, would it be proper to put on a regulator with an automatic throw-over valve, or can I put an

automatic throw-over on without a regulator?

C.E.C.

It will be necessary to use a regulator ahead of the one which comes on the conversion burner. The automatic change-over regulators are equipped with regulators which should deliver the gas at the proper pressure for the one on the conversion burners.

However, to be certain, read the instructions which accompany the burner or check with the supplier of the burner regarding the proper pressure.—Ed.

Raising Compression

Illinois

We have a customer who has a 1954 ¾-ton GMC pick-up truck. This truck is equipped with 125 hp motor and has a 3.32 bore and 3 13/16 stroke. We would like to increase the compression ratio on this motor as much as is practically possible.

Please advise what should be done.

H. G.

Replying to your inquiry about raising compression, this engine has a standard compression ratio of 7.5:1. If it is to be used alternately on propane and gasoline, we would not recommend that the ratio be changed.

If it is to be converted for exclusive use of propane, it will be practical to raise the compression. We understand that there are no higher pistons available from GMC, but that they can be obtained from Jahns Quality Pistons Inc., 2662 Lacy St., Los Angeles, Calif.

We would suggest a ratio of 8.5:1 if pistons are to be used. It is possible to plane the head on this engine, and if your customer prefers to do it this way, a cut of .085 in. off the present head will give a compression ratio of 8.2:1.—Ed.

How Much Volume for Bulk Plant?

New York

We are presently in the L. P. gas business, using approximately 700,000 lb of propane gas annually. We are hauling this gas in 100-lb cylinders from our suppliers, a distance of 80 miles per round trip.

We are interested in putting in our own bulk plant. As we are not in position to have this gas delivered by rail, we will have to have it delivered by truck transport.

What we would like to have is unbiased advice on the total cost of operating the bulk plant—that is, putting the above stated amount of gas through such a plant, based on a 30,000-gal. storage tank, with the most modern, efficient equipment, to include four automatic scales.

Could you give us an estimated itemized cost of product, transporta-

tion and investment, which we would like to liquidate in about a five-year period. Our labor cost would be \$1.50 per hour.

R.C.R.

We believe that you will find guidance in answering your problem in the article entitled "To Build or Not To Build A Bulk Filling Plant" which appeared in our March, 1950, issue.

This gives you a basis for figuring whether or not such a plant installation would be profitable. You will need to bear in mind that a certain amount of gas is lost in operating the filling plant and should plan on at least 2% allowance to offset these losses.

In our February, 1953, issue we published an article entitled "Planning the Distributor-Dealer Bulk Plant," which gives valuable information on the design and safety features. Unless your prospective volume is considerably higher than you now enjoy, we believe that a 30,000-gal. storage tank would be larger than is justified.

An 18,000-gal. tank can be put in for approximately one-half the cost of the 30,000-gal. tank and that will enable you to receive car shipments and give you a 30-day supply unless your business is abnormally seasonal.

Without going into a complete engineering analysis it would not be possible to state definitely but it appears on the surface that your operation is now marginal, or a little too small, to pay out on your own bulk filling plant.

You might be able to help this situation by arranging to fill cylinders for other dealers in the surrounding towns or by arranging to supply filled cylinders for appliance dealers in your trade area who wish to handle gas. We trust that this information will be of help to you.—Ed.

Undiluted Propane

British Columbia

The writer is anxious to obtain information on central town plants distributing undiluted propane gas. We would appreciate any information or references that you can suggest to published data on this subject.

We would like to know the location of such plants as are in operation in towns or subdivisions in the Western states and in Washington, Oregon, and California in particular.

A.C.Y.

There are many towns and subdivisions served with L. P. gas in the Western states. However, the majority are diluted L. P. gas-air plants because they were served with manufactured gas at one time. A large number of the towns that were served with undiluted L. P. gas in the southern California area have been converted to natural gas.

Following are some towns or housing areas which are now served by undiluted L. P. gas:

Richland Gas Co., Duportal St., Richland, Wash.; Naval Ordnance Test Station, China Lake, Calif.; DeLuz Housing, Camp Joseph H. Pendleton, Oceanside, Calif.; Las Vegas Gas Co., Las Vegas, Nev. (now converting to natural gas).—Ed.

Tuloma LP Gas

**The New name that means
dependable service to LP-Gas
distributors and dealers.**

Tuloma Gas Products Company, now marketing the same high-quality products formerly marketed by Stanolind Oil and Gas Company, was organized to give added service to distributors and dealers throughout America.

Tuloma's 30 supply points are strategically located in 10 states providing the flexibility needed to assure our customers of "on time" deliveries.

Tuloma's trained personnel will assist you in every phase of your operations, whatever the requirements.



TULOMA GAS PRODUCTS COMPANY

A Wholly Owned Subsidiary of Standard Oil Company (Indiana)

PHONE 2-3261 • BOX 591 • STANOLIND BUILDING • TULSA 2, OKLAHOMA

AUGUST



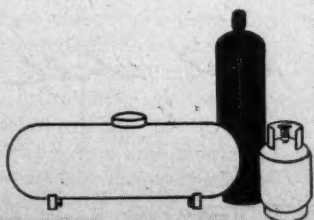
Beyond the Mains

DISTRIBUTING LIQUEFIED PETROLEUM GAS is not the simplest and easiest business in which a man may engage. It is not as simple, for example, as the appliance business, or the gas business, or the transportation business. Actually it is all three of those businesses rolled into one. Any one of those businesses can be legitimately regarded as a specialty. Operating any one of those three businesses profitably takes a good man. Developing the full potential of the three when combined into a single LPG distributing business takes a better man.

One of the standard characteristics of human beings is that we tend to specialize. We devote more time to and become more proficient at the line of activity that interests us most. The majority of LPG distributors were salesmen before they went into the gas business, and since the business lives on sales this department generally gets the lion's share of the boss' time and attention. In a great many LPG businesses the transportation department has been an orphan child. Not intentionally, of course. There's just so much time in a day, and sales come first.

THE FIRST BULK DELIVERY TRUCKS were rather primitive affairs. That was all right -- we had to start with what was available and develop from there. Transportation science in the LPG industry had yet to be developed. The factors of routes, schedules, delivery limits, and customer tank sizing were still in the class of the mysterious quantity "X."

Progress has been made in all those lines, but looking around we note that not all operators have made progress. Some -- many -- are still using "early American" equipment and equally haphazard planning. Some of them are making money, not because of their methods but in spite of them. Many of these operators could double their profits by making more efficient use of their present inefficient delivery equipment. Many could also double their profits again by getting rid of their present delivery trucks and getting some new ones designed so they could deliver about 50% more fuel in a day.



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Continued ...



Continued...



Beyond the Mains

Transportation science in the retail end of this business is still in its infancy. For evidence we cite the fact that our biggest and most efficient operators find it desirable to design their own delivery trucks, and they are not all alike. But over the years they are coming closer to standardization of basic ideas. On one fundamental they are all agreed; the cheapest is not the most economical. Time is more expensive than equipment, so they install equipment that saves time. They size and power the units to save time. Then they plan their delivery operations to save both time and miles. It all adds up to profits, both now and in the future.

TRANSPORT OPERATORS HAVE DONE CONSIDERABLY BETTER in the matter of equipment design. But their business is transportation, not sales. They have had to improve their equipment, because that was the only road to survival. They are caught between rising costs and fixed rates, and the only way out is to move more gallons at less cost per gallon.

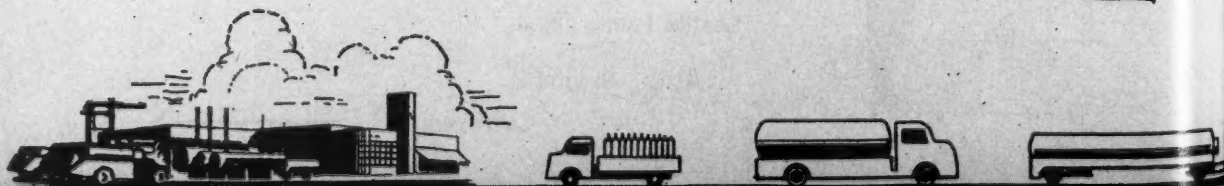
From where we sit it appears that one of the greatest opportunities for profit for the average operator is through the improvement of delivery equipment and methods.



THE CAROLINA POWER AND LIGHT CO. ANNUAL REPORT for 1953 contains food for serious thought by every L. P. gas distributor. It reports in its territory during that year the sale of 29,319 electric ranges, 10,175 electric water heaters, 47,000 electric refrigerators, 20,000 electric washers, 8800 electric clothes dryers, and 600 electric irrigation systems. It claims 57% saturation of the market on electric ranges, and 43% saturation on water heaters. Average residential energy sales, according to this report, have increased from 1520 kwh in 1943 to 3321 kwh in 1953.

Those figures represent the loss of at least ten million gallons annually to our industry. And those irrigation systems -- from our distant seat they look like economic heresy. With intermittent operation and constant stand-by charges, such as prevail in most parts of the United States, that could be far more expensive than doing the job with LPG.

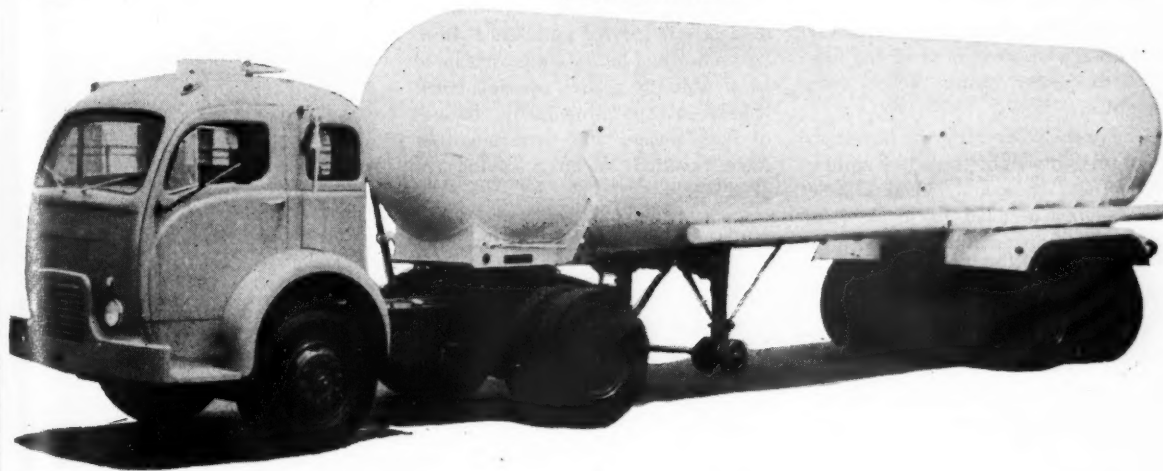
Carl Abell





exclusive

Since the limits on length, width, height and weight of transport vehicles vary from state to state, for practical purposes they must conform with the limitations of the state with the shortest, narrowest, lowest and lightest weight vehicles. This 8000-gal. semi-trailer, with cab-over-engine tractor unit, meets the short maximum length limits in midwestern states.



Improved Transport Design Increases Operating Profits

By Carl Abell

AN LPG transport operator is a venturesome capitalistic *entrepreneur* operating under the American system while completely surrounded by limitations.

His income is limited by the rates per gallon established by the Interstate Commerce Commission or by some state regulatory body performing the same functions within a single state.

The length, width, height, and weight of his transport vehicles are limited by authorities in the states through which he operates. These limits vary from state to state, so for practical purposes we must consider that the size and weight must conform with the limitations of the state through which he operates that requires the shortest, narrowest, lowest and lightest weight vehicles.

The containers for the cargo, and the equipment for its transfer and control must meet or exceed the minimum limitations imposed by the authorities having jurisdiction, and the wishes of his insurance carrier.

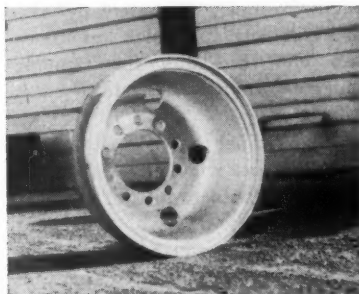
The amount of fuel that he can transport at any one time is limited by the net payload capacity available

after conforming to the above limitations and providing the necessary physical structures to contain, support, and move the load.

And finally, the number of payloads that his transport outfit can carry in a year (provided that he can get the business) is limited by the permissible speed on the highways, by the ability of the engine to maintain that speed, and by the amount of time out of service necessary to maintain the vehicle in condition to meet its road requirements.

Almost any engine can maintain a transport at maximum permissible speed on level roads, but it takes a lot of engine to hold this same speed on hills, and to get a heavily loaded vehicle up to speed after it has slowed down. Power requirements are set by traffic and grades, but in any given type of engine the weight goes up as the size is increased. Any increase in weight of the engine or any other component of the truck results in limiting the net payload that can be carried.

So the problem of designing transport equipment boils down to this: how can we build the job within the



Aluminum alloy wheel saves 45 lb. On truck and trailer outfit it provides 190 gal. extra payload capacity.

limitations of size, weight, safety of cargo, and available power, to produce the highest earning capacity and the lowest operating cost per unit of fuel moved.

The purchase price enters into this picture, but only indirectly insofar as it affects depreciation, direct operating costs, and earning capacity. If a little increased first cost enables the operator to move a substantially increased amount of fuel in a year, these extra dollars may turn out to be the most profitable part of his investment in the vehicle.

There is not much we can do about changing freight rates or getting special dispensation on size and weight limits. But much has been done in recent years toward the elimination of excess weight in transport vehicles, and toward improvement of engines in both power output and lower weight.

One of the pioneers in the development of lightweight transport equipment recently accomplished a further saving of 1300 lb in vehicle weight by changes in design and materials. This permitted an increase of 400 gal. in the net cargo capacity of the transport outfit. With revenue of approximately one cent per gallon per hundred miles of operation with load, and the truck operating 10,000 miles per month with load (20,000 miles per month with two shifts of drivers) this adds up to \$400 per month extra income.

Extra earnings of \$4800 per year will justify quite a bit of extra cost in the construction of the truck. The extra income that this outfit has been able to produce more than offsets the depreciation of the complete transport. And the figures just quoted are in relation to specially designed trucks formerly operated by this same company, and which were more than 1000 lb lighter than similar transports built on standard truck chassis.

These savings in weight are coming to be more widely accomplished. Several manufacturers of trailers and semi-trailers have materially lowered the tare weight of their products by frameless construction, the substitution of lighter metals for certain running gear parts, and the use of higher strength steel alloys for tank shells and other parts which must necessarily be built of steel. Relief of stresses set up in welding has made these units acceptable to the regulatory authorities, and has resulted in only a slight difference in cost.

The development of special truck design, or even the introduction of special features to adapt the units to special service, creates special problems that manufacturers of quantity production trucks do not like. This is understandable, because any departure from standard assembly upsets the routine, and generally costs more than the manufacturer can get from

the customer for the specially built units.

The manufacturers of the heaviest trucks are more flexible in this respect, since their production of these models is in limited numbers at best. Large users of heavy transports have been able to secure special truck chassis incorporating many changes of both design and materials that have resulted in large savings of deadweight.

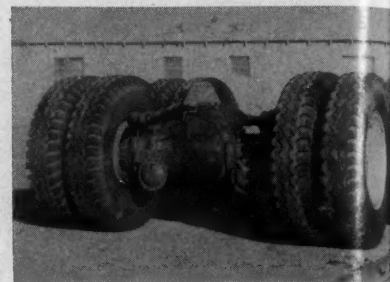
Several western transport operators have gone extensively into the use of aluminum alloys for frames, chassis castings, axle housings, hubs, wheels, bumpers, hoods, and cabs. By these changes they have been able to save as much as 3000 lb as compared with stock models. The saving in wheel weight alone amounts to 450 lb on the truck and 360 lb on the trailer of a tandem outfit.

The use of disc type aluminum wheels in substitution for similar steel wheels has become practical as the result of knowledge of metallurgy derived from the aviation program. High strength alloys which can be formed in a press, and which have hardness and toughness unknown only a few years ago, produce wheels which not only save weight, but which also have durability. California Liquid Gas Corp., Sacramento, Calif., has been using these wheels for approximately six years, and reports that the maintenance cost is less than with steel wheels.

Aluminum alloy hubs are another great weight saver, and when combined with aluminum wheels they offer a secondary advantage of dissipating the heat from the brake drums more rapidly than can be accomplished with steel hubs and wheels. This results in a saving of both time and expense in maintenance of brakes and drums.

Aluminum alloy truck frames are coming into more extensive use in "custom-built" transport units produced on the West Coast. Pioneer work in this direction was conducted there by Fageol Motors and Good-year more than 25 years ago, but without great success until the modern high-strength alloys became available. Aluminum alloy is now successfully used for both side rails and cross members. Results have been satisfactory from the standpoint

of load carrying capacity and durability, but so far there is one disadvantage. In case the frame becomes twisted in a wreck, the bent members must be replaced, whereas steel can sometimes be straightened by heating. Such wrecks are of infrequent occurrence, and the extra earning power made possible by the saving in weight more than covers this extra cost.



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Transport outfits need substantial bumpers at the front and rear. These are in reality extra frame members, and they could very well be made of aluminum even though the rest of the frame were made of steel.

Aluminum rear axle housings have been available for years. The saving in weight in a tandem rear axle runs into high figures. These units have a very good record not only on LPG transports, but also on the general freight hauls in the Rocky Mountain states and the Pacific Northwest, where they first saw extensive use because of the need to save weight to meet severe restrictions on weight.

Light alloy gear cases offer another opportunity to save weight, as is also the case with the castings used in putting the truck chassis together. The same applies to the radiator shell, while additional small savings in weight can be made by using aluminum sheeting and structural forms in the hood and cab. Taken altogether, these weight reductions can reach an impressive total, and the extra pay-load that can be carried within the total weight limit pays off in extra revenue for the contract operator, and fewer trips to move the same amount of fuel for the distributor who hauls his own LPG.

The same principles of economics apply to the full trailer and the semi-trailer, saving in weight of the under-

structure permits the use of larger cargo tanks. About two years ago Superior Tank and Construction Co. of Los Angeles introduced an "integral" full trailer, which utilized the tank as the frame. Mountings for the axles were welded directly to the tank, and running gear units were supplied by Utility Trailer Co. The elimination of the frame permitted the use of a tank with 200-gal. additional capacity, which increased the revenue approximately \$6 per 8-hour day on contract operation. The center of gravity was also lowered,

lower maximum. In this way, he is able to deliver the highest possible gallonage and make the greatest permissible profit on each load.

Time is an inescapable factor in any transportation problem. It affects payroll costs and the relation of fixed charges to revenue. The time required to move a load from one place to another is definitely related to horsepower. The horsepower requirements for most economical operation are fixed by terrain and traffic conditions. Level operation in a predominantly rural area does not

atics and judgment. Generally speaking, it is better to have a little surplus of power, so when the inevitable heavy going is encountered the engine will be able to do its job.

Some of the same operators who have been having such success with the big Hall-Scotts on the grades are now looking carefully at a new LPG engine, turned out by the same company, which produces 245 hp at a saving in weight of 1100 lb compared with the 325 hp job. This 1100 lb is equal to 260 gal. of propane in the payload, and this extra revenue capacity could amount to \$7 or \$8 per 8-hour shift. While the smaller engine would be handicapped on a mountainous run, and would be distinctly deficient in getting its load through a metropolitan area, the largest production and use of LPG in the west takes place in the San Joaquin and Sacramento valleys in California, where a 245 hp engine could come within a few minutes of equalling the schedule of the larger power plant.

There seems to be a tendency to underpower rather than to overpower the transports east of the Rockies, although time is worth just about as much in one part of the country as in another. The difference in point of view probably comes from the fact that a semi-trailer can get along with less truck under the front end than is required to carry the body load of the western truck as used in the tandem outfit. The smaller truck has a smaller engine, and the operator learns to get along with the slower and less efficient outfit.

Many operators can profitably spend a little time figuring the factor of time into their equations of cost and revenue. This is particularly true of the contract haulers on long distance operations. Using light-weight large capacity outfits will move the required amount of fuel in less trips. In many cases having more horsepower available for accelerating through traffic and maintaining speed on grades will save hours on the necessary trips, and this will inevitably reflect in the saving of overtime pay and even days on some trips, and if days are saved, more trips are possible. Those trips can bring extra revenue without any extra overhead or fixed charges.

Because the truck-tractor of the



An 1800-gal. LPG tandem transport weighing less than 7800 lb loaded. This is possible through the use of light weight materials and frameless construction in trailer.

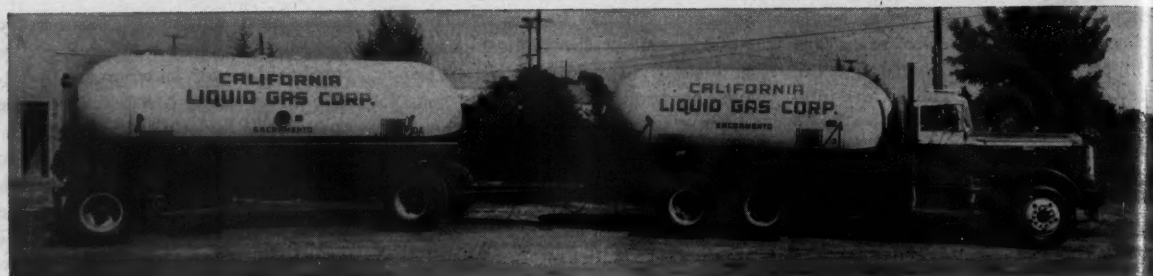
which most operators regard as an advantage, and the turning radius was decreased, which has always been desirable.

Work along similar lines has been going on for some time in the design of semi-trailers, which are used almost exclusively in states having maximum length restrictions of 45 and 50 ft. This includes nearly all of the states east of the Rocky Mountains. By taking advantage of frameless design, using light weight materials where applicable, and using high tensile stress relieved steel tanks, several manufacturers have succeeded in producing semi-trailer units of approximately 8000 gal. net payload capacity which come within the weight limits of most states. An interstate operator using such a vehicle complying with the length limit of 45 ft (the lowest in any state) can have it built with the highest allowable capacity of any state in which he operates. Then if he is going into a state with lower gross vehicle weight limits he can compensate by reducing his load to comply with the

require the extreme power that is needed for mountainous or hilly country, or for routes including a high percentage of urban traffic. Thus we see that most of the transport outfits used in the Far West and the Rocky Mountains have at least 200 hp, and a great many are using 325 hp power plants. With these huge engines the truck and trailer units are maintaining close to passenger car performance.

The super power plants in most widespread use are Hall-Scott engines, factory built for operation on LPG. This engine, complete with fuel system, is lighter than the Cummins diesel of approximately 200 hp, which is also extensively used to power LPG transports. The Hall-Scott is used on most of the mountainous routes because of its ability to save time on the grades.

Bearing in mind that any extra weight in the power plant offsets weight that might otherwise be devoted to payload, the proper sizing of an engine for a given set of operating conditions is a matter of mathe-



semi-trailer transport is smaller and lighter than the truck unit of the tandem outfit, the weight that could be saved by light-metal construction is considerably less. There is still room to consider the advantages of aluminum alloys for wheels, hubs, rear axle housings, fifth-wheel tables, and other units which could be scheduled into the assembly lines at the truck factories just as optional equipment is scheduled into the production lines of automobile factories. These changes might very well add up to the ability to carry a semi-trailer with several hundred more gallons of payload capacity. Since most of the truck would still be standard, the premium for the changes should be moderate.

The use of lightweight materials offers the opportunity for the operator with the difficult route to have the benefit of a large chassis and more powerful engine. This is an advantage in many localities where the terrain, as the truck driver remarked, "averages level—what isn't uphill is down." Under conditions like this, extra horsepower really pays off.

Selection of engines for this type of service is a subject on which there is endless debate and no uniformity of opinion. Generally speaking, a heavy-duty engine developing high torque at low speed will last longer in the hands of the average driver. The disadvantages are greater weight per useful horsepower, and with many makes, a basic design which is not very well adapted to high efficiency when operated on L. P. gas.

The other extreme is the large passenger car type engine, developing high horsepower in a light weight unit, and with the torque peak at a relatively high speed. These engines must be driven at relatively high rpm to be efficient, and they do not lug down well. In fact, lugging these engines is definitely bad for them. Any such engine in heavy trucking service should be required to shift to a lower gear whenever the load pulls the engine down to a minimum speed that is suitable for that engine.

There are a number of engines between these two extremes which perform with reasonable efficiency on L. P. gas with a suitable compression

Transport outfit built for maximum load capacity and time saving on hilly routes. It has maximum aluminum construction, frameless trailer, 325 hp butane engine.

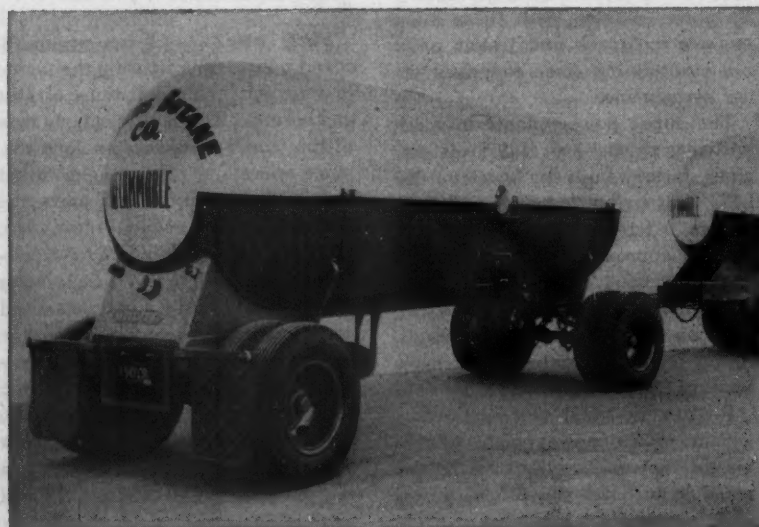
ratio increase, and which have torque characteristics reasonably well suited to the temperament of the normal truck driver.

In selecting trucks for semi-trailer transport service, no one should overlook investigating the two trucks in this group which come factory-equipped for LPG operation. Their manufacturers have done a good job in redesigning them to operate on the fuel of our industry, and they are working hard to sell these models, which increases the market for our product. These matters should be considered for what they are worth in arriving at a decision.

There are many details to consider in connection with safety in transport design. These come mainly under the ASME code and the NFPA Pamphlet 58 as far as they relate to the tank and fuel equipment, and these details are well understood by the engineers who design the tanks. Other items concern compliance with state laws, which differ considerably in the various states. The motor vehicle codes of the states in which the vehicle is to operate are the sources of this information.

Safe operation requires that the tires and brakes shall be adequate for the loaded weight, and that the driver shall be provided with the comforts and conveniences that enable him to do his work without undue physical or nervous strain. This includes adequate power to move the load efficiently.

Improvements in all these lines are being made from year to year, but the big improvements from the standpoint of future profits are lighter weight construction and the ability to carry larger payloads within the limitations on size and weight.



Structural details show method of mounting axles on frameless trailer.

STATE SIZE AND WEIGHT RESTRICTIONS

OCTOBER 15, 1953

STATE	HEIGHT	LENGTH			Maximum Axle Load in Pounds	Tandem Axles 4 Apart	Maximum* Gross Weight in Pounds			FORMULAE** and TABLES
		Single Unit	Tractor Semi- Trailer	Other Combina- tions			Tractor Semitrailer		Combi- nations	
							Single Axle	Tandem		
Alabama	12'6" A	35 B-1	45	N. P.	18,000 S	36,000	45,000	55,300	N. P.	700 (L+40)
Arizona	13'6"	40	65	65	18,000	32,000	45,000	68,000**	76,800	Table
Arkansas	12'6" A	35 B-1	50	50	18,000	32,000	45,000	56,000***P	56,000 P	Table
California	13'6"	35 V, B-1	60 T-2	60	18,000	32,000	45,000	68,000***	76,800	Table
Colorado	12'6"	35 V, B-1	60	60	18,000	36,000	45,000	67,200***	75,200	800 (L+40)
Connecticut	12'6"	45	45	N. P.	22,400	36,000	50,000	60,000	N. P.	-----
Delaware	12'6" A	35 B-3	50	60	20,000 S-1	36,000	49,000	60,000	60,000	Table
Dist. of Col.	12'6"	35	50	50	27,000	38,000	53,000	63,890	65,400	Table
Florida	12'6" A	40 V	50	50	20,000 S-2 M-1	36,000 M-1	53,000	70,000***	70,000	Table
Georgia	13'6"	35 B-1	45	45	18,000	36,000	45,000	55,300	55,300	700 (L+40)
Idaho	14'	35 B-D	60	65	18,000 S-3K	32,000 K	45,000 K	67,500***K	72,000 K	Table
Illinois	13'6"	42	45	45	18,000 S-3	32,000	45,000	59,000	72,000	-----
Indiana	12'6" A	36 B-1	50	50	18,000 S-3	32,000	45,000	72,000***	72,000	-----
Iowa	12'6" A	35 V, B-1	45	N. P.	18,000	32,000	45,000	65,478	65,478	Table
Kansas	12'6" A	35 V, B-1	50	50	18,000	32,000	45,000	63,890***	63,890	Table
Kentucky	12'6"	35	45	N. P.	18,000 S	36,000	42,000	42,000	N. P.	-----
Louisiana	12'6" A	35 V, B-1	50	60	18,000	32,000	36,000 P	64,000***P	68,000 P	-----
Maine	12'6" H	45 H	45 H	45 H	22,000 S	32,000	50,000	50,000	50,000	Table
Maryland	12'6" A	55	55	55	22,400	40,000 I	53,800	65,000	65,000	850 (L+40)
Massachusetts	N. R.	35 B-D	45	N. S.	22,400 S-3	36,000	50,000	50,000	N. P.	-----
Michigan	12'6" A	35 B-1	50	50	18,000 S-1	26,000 J	45,000	67,000***D	111,000 D	-----
Minnesota	12'6"	40	45	45	18,000	28,000	45,000	65,000***	66,500	Table
Mississippi	12'6" A	35 V, B-1	45	45	18,000 S-4	28,650	45,000	52,650	52,650	Table
Missouri	12'6"	35 V, B-1	45	45	18,000 S	32,000	45,000	60,010	60,010	Table
Montana	13'6"	35 B-1	60	60	18,000	32,000	45,000	63,890***	76,800	Table
Nebraska	12'6" A	35 V, B-1	50	50	18,900 M	33,600 M	45,000	64,650***	64,650 M-3	Table
Nevada	N. R.	N. R.	N. R.	N. R.	18,000	32,000	45,000	68,000***	76,800	Table
New Hampshire	13'6"	35 B-D	45	45	22,000	30,000	50,000	50,000	50,000	-----
New Jersey	13'6"	35	45	50	22,400	32,000	53,800	60,000	60,000	-----
New Mexico	12'6"	40	65	65	18,000 S	32,000	45,000	63,000***	76,800	Table
New York	13'	35	50	50	22,400 S-3	36,000	53,800	63,000	63,000	30,000 + (Lx750)
North Carolina	12'6" A	35 V, B-1	48	48	18,000 M-2	36,000	46,200 M	58,800 M	58,800 M	-----
North Dakota	12'6"	35 V, B-1	47'6" Q	47'6" Q	18,000 S-2	30,000	45,000	59,250	59,250	750 (L+40)
Ohio	12'6" A	35 V, B-1	45 T	60	19,000 S-5	31,500 W	47,000	69,200***W	78,000 W	38,000 + (Lx800)
Oklahoma	13'6" A-1	35 B-2	50	50	18,000 S-5	32,000	45,000	60,000***	60,000	Table
Oregon	12'6" A	35	50 T	50 C	18,000 S	32,000	45,000	73,000***L	76,000	Table
Pennsylvania	12'6" A	35 V, B-1	45	50	20,000	36,000	45,000	45,000	62,000	-----
Rhode Island	12'6"	40	50	50	22,400 S-3	32,000	50,000	50,000	88,000 E	-----
South Carolina	12'6"	40 V-1	50	50	22,000	35,200 G	50,900	70,279***G	70,279 G	Table
South Dakota	13'	35 V, B-1	50	50	18,000 S	32,000	45,000	64,650***	64,650	Table
Tennessee	12'6"	35 B-1	45	45	18,000	32,000	45,000	55,980	55,980	Table
Texas	13'6"	35 B-1	45	45	18,000 S-5	32,000 R	45,000	58,420	58,420	Table
Utah	14'	45	60 T-1	60 T-1	18,000	33,000	45,000	71,400***	79,900	Table
Vermont	12'6"	50	50	50	N.S.-S.	N.S.-S.	50,000	50,000	50,000	-----
Virginia	12'6" A	35 B-1	45	45 F	18,000 D-1	36,000 D-1	40,000 D-1	50,000 D-1	50,000 D-1	-----
Washington	12'6" A-2	35 B-D	60 T-2	60 T-2	18,000 S-6	32,000	45,000	65,000***	72,000	Table
West Virginia	12'6" A	35 V, B-1	45	45	18,000	32,000	45,000	60,010***	73,280	Table
Wisconsin	12'6" A	35 B-1	50	50	19,500 S-3X	32,000 X	48,000 X	68,000***X	68,000 X	Table
Wyoming	13'	40	60	60	18,000	32,000	45,000	68,000***	73,950	Table

FOOTNOTES:

*--Maximum Practical Gross (see third paragraph General Remarks).

**--Computation based on 6' over hang.

***--3-axle tractor with tandem axle semitrailer.

A--Auto transporters allowed 13 1/2'; A-1: 13'; A-2: 12'10" allowed on 10/22 tires.

B--Buses with 3 axles permitted 40'.

B-1--Buses permitted 40'; B-2: 45'; B-3: 42'.

C--State Highway Department may permit 60'.

D--On designated highways.

D-1--16,000 lb. axle limit and 35,000 lb. maximum gross limit on all but "Heavy

Duty Highways".

E--3-axle truck with 3-axle trailer.

F--Exclusive of coupling.

G--Includes 10% tolerance.

H--Height and Length subject to 1'6" tolerance.

I--36,000 lb. if axles spaced less than 48' apart.

J--On designated highways one tandem per combination permitted 32,000 lb.

K--Plus 3% tolerance on axle weight and 8% tolerance on gross weight.

L--Permit required for gross weight over 60,000 lbs.

M--Includes 5% overload tolerance.

M-1--Plus 10% tolerance.

M-2--Plus 1000 pounds tolerance; M-3--Plus 3% Tolerance.

N. P.--Not Permitted.

N. R.--No Restriction.

N. S.--Not Specified.

P--Plus weight on front axle.

Q--Includes 5% tolerance.

R--36,000 lb. if axles do not have common point of suspension.

S--Subject to 600 lb. per inch tire requirements; S-1: 700 lb.; S-2: 550 lb.; S-3: 800

lb.; S-4 on tires 7:75 and larger; S-5: 650 lb.; S-6: 600 lb.

T--Trailer limited to 35'; T-1: 45'; T-2: 40'.

V--Vehicles over 35' must have 3 axles.

W--With tandem axles spaced more than 4' apart.

X--Includes 1,500 lb. tolerance single axle; tandem, 2,000 lb.

Y--With permit.

Achieving Proper Balance Between Chassis and Truck Tank

A truck should be large enough so that the tank can be mounted in proper balance and the load carried without overburdening the truck. The two distribution work sheets here show properly balanced units on trucks.

ONE of the standard problems around a tank factory where bulk delivery truck tanks are produced and assembled is the LPG dealer or distributor who wants a unit of a certain capacity to go on a truck that he already owns, which truck may be entirely unsuitable for the job. The gas man does not realize the importance of matching the capacity of the tank or tanks with the size and capacity of the chassis.

One of the most uneconomical moves that an operator can make is to "under-truck" a delivery unit. The operator knows—or should know—what capacity bulk tank or tanks he will need to meet the delivery requirements of his route. The tank fabricator can tell him what the gross weight of the tank, equipment and fuel will be on the completed job. The truck should be large enough, both in dimensions and carrying capacity, to mount the tank in proper balance and to carry the load without overburdening the truck.

In many cases this will require a truck of higher rated capacity than the operator had intended to purchase. Under special conditions, such as very hilly terrain, it might even need a more powerful engine and a lower gear ratio than had originally been contemplated. Old timers in the business have found that the truck that can deliver the gas when the going is toughest, and keep it up, is the unit that pays the dividends.

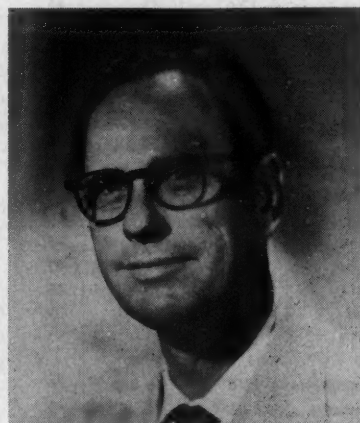
Three very important questions should be considered before a truck tank unit is purchased for mounting on your new or old truck chassis:

1—Is the cab-to-axle length sufficient to accommodate the desired tank unit with proper load distribution and with good appearance?

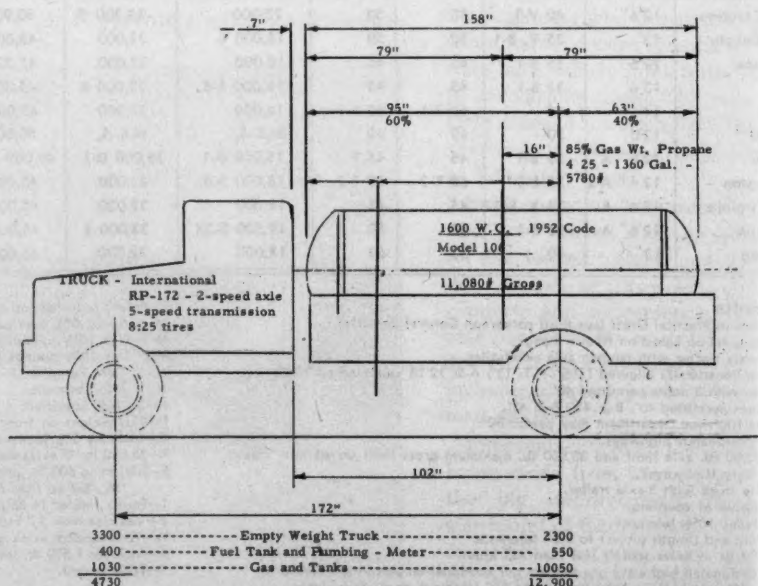
2—Is the gross vehicle rating sufficient to handle the proposed gross load of tank unit, plumbing, accessories, skirting, and 85 to 90% payload of L. P. gas weighing from 4.25 lb per gal. for propane to 4.7 lb per gal. for butane?

3—Are the tires sized correctly for the gross vehicle rating?

The most economical combination of delivery truck tank and chassis requires that the chassis shall have sufficient load carrying capacity, and that the load shall be properly balanced on the chassis. Either the tank fabricator or the truck salesman can supply the answer to the first half of that problem. Many operators arrive at near satisfactory balance on their first delivery trucks quite by accident, simply by ordering a unit duplicating those of competitor.

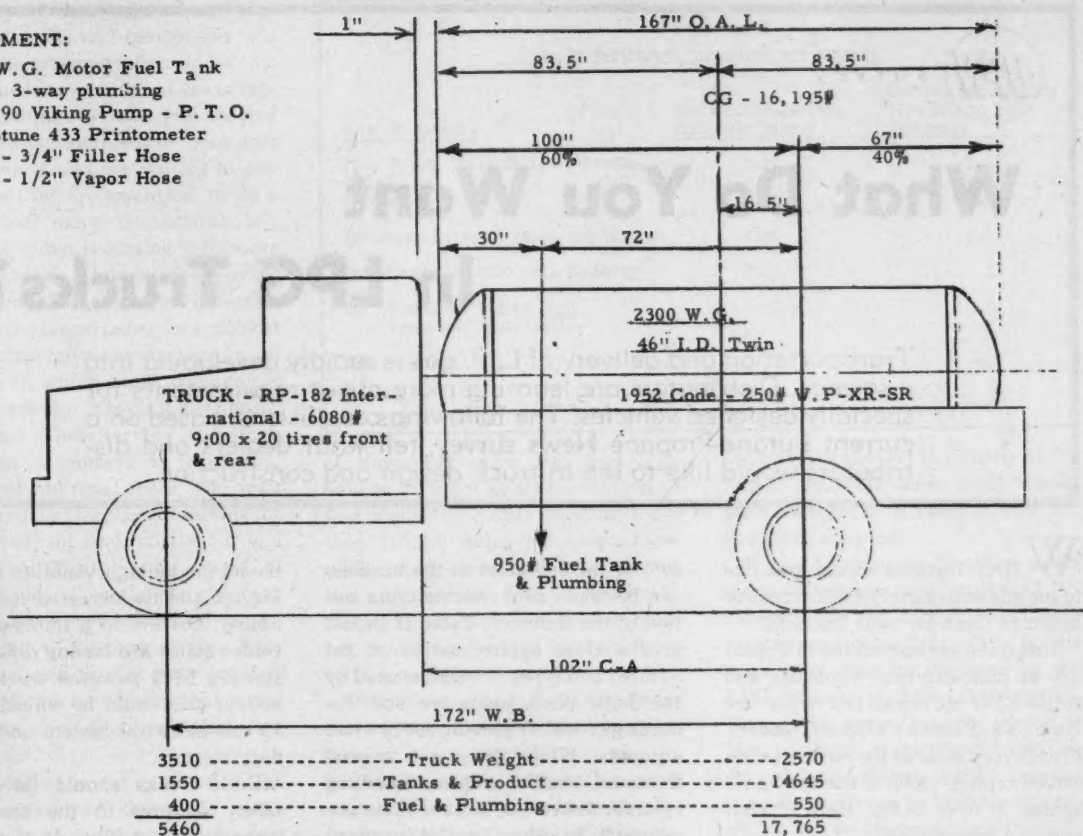


By W. N. Peacock
Chief Engineer
Trinity Steel Co. Inc.
Dallas, Texas



EQUIPMENT:

50 W.G. Motor Fuel Tank
Std. 3-way plumbing
L-190 Viking Pump - P. T. O.
Neptune 433 Printometer
50' - 3/4" Filler Hose
50' - 1/2" Vapor Hose



Gross Vehicle Weight - 23,225#

On their second unit, in their desire to outdo competition with a larger truck, they often insist on and get a unit that ends up tail heavy or top heavy. Many times this will happen in spite of the recommendations of the fabricator and the truck salesman. Thus a poorly balanced unit goes on the road and another operator becomes unhappy. The operator, the fabricator, and the truck salesman are all at fault in their efforts to outdo competition, but the fabricator usually gets the blame.

A truck with tail-heavy characteristics will soon develop front wheel shimmy, and will be unsafe to handle on slick or icy roads, due to poor steering traction and insufficient braking ability on the front wheels. On the other extreme, too much weight on the front axle will cause excessive tire wear and will cause early failure of front end linkage and bearings. This condition also develops driver fatigue, which leads to inefficiency and accidents.

To properly determine the com-

bination of truck tank and chassis for most satisfactory and economical balance of load we have found that the use of "load distribution work sheets" gives us the true picture of any proposed job. From these the buyer gets the facts covering his unit in regard to weight, length, and arrangement. These factors are not clearly shown by any set rules, regulations, or fancy guesswork.

The two load distribution work sheets reproduced herewith show properly balanced units on trucks suitable for average conditions. Note that 60% of the weight is ahead of the rear axle, and that approximately 25% is on the front axle. Manufacturers recommend this weight distribution, and competent fabricators know how to get it, providing that the chassis has the correct load capacity and dimensions.

This will lead to the assumption, which we believe is correct, that the chassis and the tank or tanks should be selected for each other. The fabricator knows what gross load capacity

is needed, and can recommend the correct wheelbase to allow the mounting of a standard dimension tank in correct balance on the truck.

After that, selection of the make, model, and wheelbase boils down to the standard purchasing procedure. We suggest the following steps:

- 1—Determine the capacity of the tank or tanks that you will need.
- 2—Find out what size and wheelbase is needed in the chassis.
- 3—Rely on the recommendations of the truck manufacturer as to the ability of the truck to handle the load, and do not go under-size. Bear in mind that in extremely hilly or mountainous areas lower gear ratios and more power are required to operate at economical speeds.
- 4—Demand proof that your axle loadings and gross weight are within legal limits.
- 5—Remember that the cheapest unit is not always the best for your operation. It is the unit that can go on delivering gas when the going is toughest that pays the dividends.



survey

What Do You Want In LPG Trucks?

Transportation and delivery of L. P. gas is rapidly developing into a science. Distributors are learning more about requirements for specially designed vehicles. The following conclusions, based on a current Butane-Propane News survey, tell what dealers and distributors would like to see in truck design and construction.

WHAT features would you like to see added to factory-built trucks to better fit them for your business?

This question was mailed in February to 5236 different wholesale and retail LPG companies who are BUTANE-PROPANE News readers. From every state in the nation we received replies—1009 of them, or a response of over 19.8%. Here it what you said you wanted:

"An LPG-powered engine for all trucks from transports to pickups, factory-installed and factory guaranteed. This engine should have higher compression and a cold manifold.

"Pickup trucks that are designed for appliance and cylinder deliveries . . . body widths that fit cylinders—with lower and more durable beds. A place for the fuel tank that does not take up cargo space. Tool compartments for parts and fittings. A power-operated tailgate with a capacity up to 1000 lb."

You have a right to be heard by the truck manufacturers and body fabricators. Just those of you who replied could make up a caravan, allowing 40-ft clearance between vehicles, reaching from Lansing to Detroit. In the line-up would be 1142 cylinder delivery trucks, 2479 pickups, 1363 passenger autos for sales and service, 2401 bulk delivery trucks to 2000-gal. capacity, 349 bulk transports or truck and semi-trailers, 153 bulk trailers, 3 combination bulk and cylinder delivery trucks, along with sundry cranes, winch trucks, and scooters.

Assuming that replies from nearly

20% of the operators in the business can be taken as a reliable cross section of the industry, Table II should give a close approximation of the number and types of vehicles used by the bulk plant operators and the bottle gas dealers serving 500 or more accounts. While there are several thousand smaller dealers handling cylinder deliveries, most of these are primarily in other lines of business, and their vehicle requirements are generally well met with standard production models.

Requests for factory installed LPG carburetion or LPG motors came from every geographical region, and for every type of truck. As a Gallup, N. M., dealer put it, "We don't want gasoline equipment that we have to pay for and then remove."

There were also many suggestions of a regional nature. In Michigan some of the operators draw fuel directly from the bulk tank to operate the truck engine; they need a reliable meter to register this consumption for state tax purposes. In Florida, which has a large trailer population, operators find a need for a small truck (about 1 ton) with a 500 to 600-gal. long narrow tank equipped with meter and scale for trailer bottle filling, and with side racks to carry about 12 100-lb cylinders.

Drivers from Oregon who must deal daily with narrow roads and small farmyards, would like to have bulk trucks with a much smaller turning radius. Parts of California face the same problem; at least one dealer would like a cab-over-engine

model for its high visibility in backing up, and its increased maneuverability. Drivers in a number of the colder states are having difficulty in starting LPG powered trucks; they believe this could be solved with a 12-volt electrical system and heavy-duty starters.

Bulk trucks should have more safety features in the opinion of many dealers. A Winfield, Kan., reader writes, "Connect pumps to tanks by means of hammer joints instead of hose clamps." From Salinas, "Install exhaust above the cab." From Geneva, Ala., "Locate all controls at one point on the left of the truck. Use automatic opening and closing valves to operate when power take-off is engaged. Have a throttle remote control near the meter and pump control." From Belleville, Ill., "Recess the clearance lights to eliminate breakage."

To all of you who said "We would like to see mechanics and dealers who know something about LPG," we would like to suggest that you inform them about the Butane-Propane Power Manual which was first introduced in 1951 to meet this situation, and is now in its second printing.

To the manufacturers of trucks and the fabricators of truck bodies and tanks we would like to point out that this survey indicates the need for units that are designed with a greater understanding of the economics of the industry and the practical operating problems of the LPG distributor. There is definite evidence that the majority of operators have pro-

gressed past the stage where anything that rolls and carries gas will serve. The transportation and delivery of liquefied petroleum gas is rapidly becoming a science, and we find an increasing number of operators who demand and are willing to pay for units that are equipped to do a better and more economical job. Efficiency of use is coming to be more important than a low purchase price.

The two tables presented herewith indicate the magnitude of the market for transportation equipment in an industry in which every company is a truck operator. This is a distributor group that is now serving more than 8 million consumers in suburban, semi-rural and rural areas, who must be contacted at frequent intervals for the delivery of fuel, appliances and equipment. The pleasant sound of certified checks rustling in the cash box will be the reward for the manufacturers and fabricators who have the vision and resources to produce transportation equipment that meets the needs more effectively than that of the past.

The market is not confined to the local distributors; there are many contract haulers operating transport service for major movement of products from the producer to the distributor.

A concurrent survey showed that 67% were delivering more of their annual LPG output by truck transport than by rail or marine freight or by products pipelines; 30% were delivering their output *solely* by trucks. Checking with transport operators we find that truck mileages

Type of Vehicle	Distributor-Dealers With Bulk Plants	Bottled Gas Dealers With 500 to 3000 Customers
Flat Bed Cylinder Delivery Trucks	1.11	1.32
Pickup Trucks	2.52	1.87
Passenger Auto for Sales and Service	1.40	1.05
Bulk Trucks to 2000 Gal. Capacity	2.63	.12
Bulk Transport Trucks (or) Truck and Semi-Trailer	.38	.01
Bulk Trailers	.17	.02
	8.21	4.39

of these big units run into high figures. It is not at all uncommon to find transport outfits running more than 100,000 miles per year. Even with expert care and maintenance the replacement date of trucks in this service comes soon. Most of these big trucks are retired in from three to five years.

Obsolescence of bulk and cylinder delivery trucks is a factor that is becoming more important in the replacement market with each passing month. More and more operators are finding out that the cost of using unsuitable delivery equipment is higher than the cost of replacing the obsolete units with new vehicles that will deliver more fuel in less time and with less physical labor. Forty-one percent of all questionnaires returned in this survey mentioned one or more features that these operators would like to see added to factory-built trucks. This percentage would undoubtedly have been higher had it

not been for the fact that many of the larger operators have their trucks built to their own designs, and are therefore satisfied.

If past history can be taken as an index to future expansion of the LPG industry, we can look confidently to an increase of at least 20% in the number of vehicles required by the LPG industry in the next two years. During this same two-year period at least one-third of the present vehicles should be replaced, either because they are worn out or because unsuitability or obsolescence place too high a penalty on their continued use.

Putting these factors together, we can foresee the sale of at least 25,000 new trucks required by the retail end of the business in the next two years. This is good business for the manufacturers who have the ability to analyze the needs of this growing market, and the facilities to build units to conform to the developing needs of the market.

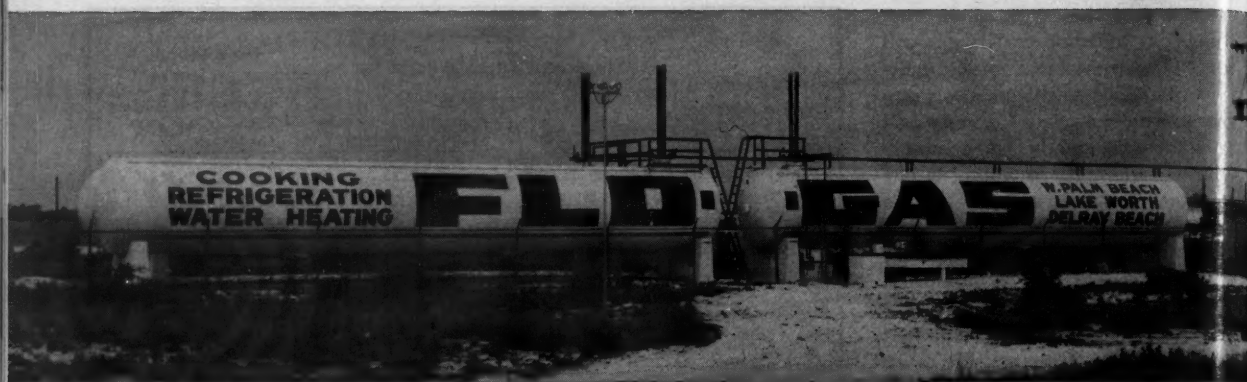
TABLE II

ESTIMATED NUMBER OF VEHICLES IN USE

	Cylinder Delivery Trucks	Pickups	Passenger Autos	Bulk Delivery	Bulk Transport	Bulk Trailer	Total
Distributor-Dealers With Bulk Plants	5,208	12,344	6,835	12,827	2,175	829	40,218
Bottled Gas Dealers (500 to 3000 customers)	1,937	2,995	1,647	236	14	25	6,854
Combined	7,145	15,339	8,482	13,063	2,189	854	47,072

Note 1 - The above figures do not include vehicles operated by LPG producers, piped town plants, or bottled gas dealers with fewer than 500 customers.

Note 2 - The "Average Units Per Company" have been calculated from and represent only the actual figures in the 19.8% returns. The totals of vehicles represent an extension of these returns to the total dealers in each geographical area.



Three 30,000-gal. tanks are on the site at Lantana, Fla., today. Flo-Gas started in 1949, has grown to serve 3000 accounts in and around greater West Palm Beach. Lantana has space for seven more 30,000-gal. tanks if they are ever needed.

Flo-Gas, Advance Scout . . . Establishes Outposts for Florida Utilities

By Charles W. Cobaniss



Like many other metropolitan areas, Palm Beach and West Palm Beach have grown through the spot subdivision of rural acreage. Growth has been so rapid that home building is largely done on an assembly-line basis. With these many scattered housing tracts it has not been either physically or financially possible for the local utility gas company to keep up with the need for fuel service by extending pipelines.

Florida Public Utilities Co., which has the gas franchise in West Palm Beach, was not willing to abandon the surrounding new developments to electric competition and thereby be excluded from profitable operation in the new areas for at least a generation. It set up its own subsidiary company to serve these developing areas with propane. It did the job in the utility manner, with installations designed for quick, convenient and inexpensive connection to the central pipeline system when mains can be extended.

In many suburban areas surrounding other cities the local utilities serving the central population would like to protect their fu-

ture interests in the new suburban areas, but prefer to have local independent LPG distributors make the sales and installations. Most independents prefer to keep out of the jurisdiction of the public utility commissions, so must develop their systems so they cannot be legally classified as public utilities. In most states this precludes "block installations" but does permit limited multiple service from central tanks. It also permits metered service, which most suburban customers prefer.

The article below gives a pattern which seems logical for a utility company handling its own suburban expansion with L. P. gas. Between this and the customary individual customer service through cylinder or bulk installations is a wide zone for profitable cooperative effort in a territory which will eventually be reached with pipeline service. Such development work should be planned and programmed in advance, so the transition from propane to utility service can be made easily, and so maximum protection may be provided against the common competitor, electricity.—Ed.

THE post-war building boom in south Florida, which laid the foundation for scores of new industries, gave birth to Flo-Gas Corp., a liquefied petroleum subsidiary of Florida Public Utilities Co. of West Palm Beach. Flo-Gas serves 3000 customer accounts today and is gaining new ones at a rate of about 600 a year.

Development has been rapid for this firm, now five years old. It started in July, 1949, when building boomed in the greater West Palm Beach area and the need was created for bottled gas utility to reach customers living beyond the city gas mains.

Dealing in propane gas only, Flo-Gas has brought its clean, fast, and dependable service to users at a cost comparable to piped city gas and competitive to electricity. The LPG firm operates an all-metered system which serves, in addition to many homes, a goodly number of motels and restaurants which cater to a vast tourist trade.

J. L. Terry, Palm Beach and Princeton, N. J., is president and principal stockholder of both Flo-Gas Corp. and Florida Public Utilities Co. J. K. Roberts, West Palm Beach, is vice president and general manager.

Lonnie W. Williams, distribution

superintendent for both firms, said a new method of "block system" distribution with underground service tanks to supply each block is being used very successfully here and elsewhere in Florida in the L. P. gas operation. The "block" plan, having tanks buried in the easement of each block of a subdivision, is being used in Englewood Manor outside the community of Lake Worth, a city seven miles south of West Palm Beach, and in many other communities.

Some 100 all-LPG houses have just

during peak loads that cold snaps caused for the manufactured-gas plant output of Florida Public Utilities Co. For this use one 30,000-gal. propane storage tank was kept at the plant, which produces a carbureted water-gas of 510 Btu. Back in 1949, when Flo-Gas started, this tank was used as the source of supply for the LPG operation.

When construction started on hundreds of small subdivision homes for veterans and new settlers in this area, the need was seen for a means of

mains and stepping up the capacity of its gas plant of 6 million cu ft a day output.

Distribution mains, a minimum of 2-in. size, would have to have been laid to the fields at a minimum cost of 80 cents a foot. All this was looked upon by company officials as unprofitable, whereas Flo-Gas has provided comparable service in a profitable manner, officials said.

Water and space heaters are required in all VA and FHA homes built in this area, so the task of LPG salesmen is to see that propane gets the job. "And that's just what they're doing," Mr. Williams said with pride.

He said salesmen for LPG have been very successful in winning contracts to supply both these fixtures for many subdivisions as a package. After clinching the L. P. gas water and space heaters, the salesmen go to work to sell the new home owners on installing LPG refrigerators, dryers, and ranges.

As the number of Flo-Gas customers increased, the need for additional storage developed and a 30,000-gal. tank, identical to that at the manufacturing gas plant, was placed at Lantana, just west of U. S. 1 and the rails that whirl tourists up and down the Gold Coast of the Sunshine State.

The Lantana installation, nine miles south of West Palm Beach, was completed in November, 1950. A branch office was opened at Delray Beach to expedite service in the immediate vicinities.

As the demand for Flo-Gas service increased in those southern suburbs of West Palm Beach, two more 30,000-gal. tanks were installed in April of 1952 alongside the one at Lantana, making a total of 90,000 gal. storage facilities at this plant. Provision is also made at the plant for an additional seven 30,000-gal. tanks, which may be installed as demand requires.

Three tank-trucks, all of the most modern design for fast, safe and dependable operation, serve the entire metered system of Flo-Gas. All dispatching for delivery and installation is done from the distribution department in West Palm Beach. Only service calls are dispatched from the two branch offices at Lake Worth and Delray Beach.

In addition to the distribution superintendent, a service foreman and an installation foreman supervise all



Headquarters office for both Flo-Gas Corp. and Florida Public Utilities Co. is located at West Palm Beach. Fleets of service trucks for both firms are dispatched from this office. All billing is done from the downtown commercial offices of both firms.

been completed and 100 more are under construction in Englewood Manor. Large tanks are buried beneath the easement in each block, with distribution mains extending through the entire easement, tying into service lines from the rear of each house. Every house has its meter just as do city houses having piped gas. Each block in the subdivision is independent of all the others, with distribution trucks servicing the tanks periodically.

Seventy houses under construction at Boynton Beach, south of Lake Worth, also have the "block system" of distribution. The system is in full use in 111 houses of the Jones-Fredricks subdivision at Riviera Beach, one of the thriving communities north of West Palm Beach using Flo-Gas service.

West Palm Beach is where "summer spends the winter," but even so there are those somewhat chilly days when heat is a welcome stranger. Propane was used here in the immediate post-war days for peak shaving

reaching beyond the mains of the piped utility out into a whole new field of competition with electricity.

Thus, Flo-Gas Corp. was formed as a service partner to Florida Public Utilities Co., and marched out into a new field for competition for new accounts. There hasn't been a let-up since. Flo-Gas is, in a sense, an expansive branch of Florida Public Utilities Co.'s piped gas operation. It was felt by the latter firm in 1949 that the cost of expanding its facilities to reach the vast new fields of development in the area would be prohibitive.

So it was decided that truck-tanks would do the work of expensive underground mains in bringing L. P. gas instead of piped gas to the consumers in new homes that sprang up all around, and in restaurants, hotels, schools and other potential users of gas. To reach new fields of use for piped gas, Florida Public Utilities Co. would have been compelled to undergo a vast expansion program, which would have entailed the laying of

installation and service work for the two companies. Fourteen men comprise the installation crews for both the liquefied petroleum and piped gas operations. There are 14 service men equipped with pick-up trucks to answer customers' requests for service.

"There is no substitute for service," says Mr. Williams. "Sales and service go hand in hand. For that reason, a constant training program is in effect. We feel that to give our customers the best in service is our paramount duty."

Regularly scheduled service and safety meetings are held. When new appliances or equipment are received, a meeting is held to acquaint all employees with any changes and im-

provements. All new appliances, with the exception of water heaters, are connected, tested and controls calibrated before delivery to the customer. A call back, by a service man, is made within a week to correct any complaint the customer might have. Service men are scheduled to give prompt, around-the-clock service.

The three Flo-Gas delivery trucks, specially designed by Mr. Williams for speed, safety and ease of operation in getting propane to users, are high points in the local setup. Two of the trucks are the twin-barrel type, of 1300 and 1700-gal. capacities. All delivery operations are performed from the rear of these units. Vacuum clutch and power takeoff controls, carburetor solenoid switch, control levers for liquid valves, liquid meter and hose reel are located in the rear cabinets. A

third truck, with a single tank of 1200-gal. capacity, is used principally to serve domestic customers in the immediate vicinity of the plant. Frank Flesher is sales manager for both firms with eight men on his sales staff. Their task is to sell L. P. gas and city gas service and keep present users equipped with modern appliances. To promote gas, they stage a spring style show each May with all the latest appliances on display at the local business office's show room, and at the branches at Lake Worth and Delray Beach.

In addition, the sales crew holds an old stove roundup each year from August to September when allowances are given for old appliances.

Mr. Flesher, speaking from a sales standpoint, attributes the success his firms have had to these three things: "First, we had the advantage of years of experience in the gas field—not only in sales, but in distribution, office routine and customer relations. With this experience we were able to sidestep many of the difficulties that we might otherwise have encountered, difficulties that have proven costly to a great many new LPG companies.

"Second, before Flo-Gas was ever offered to the public, we made a thorough study of similar services then being offered. We talked to a great many users and found out what they liked and what they didn't like in



Flo-Gas' twin-barrel delivery truck, with 1700-gal. capacity, is one of two trucks of this type belonging to the firm. The other has a capacity of 1300 gal. A third truck, with a single tank of 1200-gal. capacity, is used principally to serve domestic customers in the immediate vicinity of the plant.



Rear compartment controls of the newest addition to the Flo-Gas fleet of delivery trucks, this one with a 1700-gal. capacity. Vacuum clutch and power take-off controls, carburetor solenoid switch, control lever for liquid valves, liquid meter and hose reel are located in this rear cabinet.

Bob Samler is commercial representative for both firms, keeping a close contact with all commercial users and potential customers, including restaurants, hotels, schools. He advises in the selection, planning and use of equipment.

Salesmen are in constant contact with architects. When a subdivision plan is passed by the city or county fathers, they go to work on the developer to cinch LPG for water and space heaters as a package. Then they get a list of buyers from the developer and go to work for L. P. gas refrigerators, ranges, dryers and any other use LPG might be put to.

Flo-Gas and Florida Public Utilities Co. sales promotion does not incorporate any "gimmicks" or novelties, but just good sound business ethics that have proven themselves over the years.

their present services. With that information we then designed a system that would, as nearly as possible, please all L. P. gas users and we named it Flo-Gas Corp. The fact that the system clicked surely justifies the planning we did.

"Third, we already had a good sales organization in operation. We had established lines of quality merchandise. We had an attractive budget plan and it was no great problem to supply this service to the LPG operation. As mentioned previously, we stage two major sales events each year—old stove roundup and our spring style show. All items offered for sale are available to either piped or LPG customers at the same price and terms. In other words, we have just continued doing what we were doing before we ever thought of Flo-Gas."



exclusive

Service Training —

Cornerstone of Rapid Thermogas

A full-scale training program, which gives technical information to dealers and servicemen, results in satisfied customers, excellent safety records and increased sales volume.

By Gene Kieffer

ASK the Rapid Thermogas Co. of Des Moines whether service training pays off financially, and Grant Haas, director of sales, will cite a recent company survey that shows a gas sales increase of more than 30% as proof that it definitely does.

Rapid Thermogas has had a full-scale training program in operation since 1948 in an effort to make its nearly 700 retail dealers more safety minded and assure more skilled installations for the gas users.

The program has been even more of a success than company officials had dared hope. "Even though we can't always measure the value of the school dollar-wise," Mr. Haas said recently, "we feel that it is an essential department, and we wouldn't dispense with it for anything."

While this enthusiasm is felt in the home office and in the 13 company wholesale plants scattered throughout Iowa, Wisconsin and Illinois, satisfaction and pride run even higher among the hundreds of dealers and their servicemen who have made attendance at the school a "must" in their operations.

C. L. "Jim" Crippen, director of the service school, has a file bulging with testimonials students have written after completing the company's five-day course.

To earn this enthusiastic approval for Rapid Thermogas, Jim Crippen and his instructor-assistant, Bob Manning, have set up a 40-hour course which crams technical information on such subjects as the chemical composition of L. P. gas, porce-

lain enamel, and the workings of the most intricate thermostats and valves into the minds of beginning and experienced dealers alike.

Mr. Crippen has had 24 years of experience in the L. P. gas business. He believes just as much in the practical problems his students will run up against as he does in the theoretical aspects of the course. For this reason, the classroom in the company's home office in Des Moines looks more like a college physics laboratory than a sales meeting room.

Several large tables are joined together in the center of the room, and along the walls have been placed several different types of gas ranges, clothes dryers, water heaters and other appliances handled by the average Rapid Thermogas retail dealer. These appliances are taken apart again and again by students under the instructors' supervision.

A work bench stretches from wall to wall at one end of the classroom, and on it are set up for operation thermostats, controls, burners, valves and pieces of laboratory apparatus which Mr. Crippen has designed and built to illustrate the lectures.

A maze of piping, ranging from $\frac{3}{8}$ in. to $\frac{3}{4}$ in., is connected to an L. P. gas cylinder by a series of valves. By means of this apparatus, gas can be fed through any size pipe and regulators to a series of one-jet burners to show students the value of a flame at various pressures.

The dealer-servicemen students spend full days in that classroom with only an hour off for lunch. With so much to learn in such a short time, there's no time for anything but hard



Jim Crippen explains to class the function and operation of a water heater control.

work on the part of students and instructors alike.

A common student complaint, if it can be called a complaint, is that there is too much information given out for the short time allotted. The company is aware of this, but it feels that much of what the men are taught will be recalled when they are out on the job and confronted with situations similar to those discussed in the classroom. Notebooks kept by the students, and the company service manuals, will help to fill the gaps when their memories lag.

This up-to-date training school, offered free of charge to all company personnel as well as Rapid Thermogas dealers and their employees, is only one of the many services offered by the firm. These services have helped to build Rapid Thermogas into the largest and oldest independent bottled gas company in the midwest.

The company's conception of "superior service" is comprehensive. The keystone is the service training school, of course, but service instruction is followed through in the field by plant managers and field men who assist dealers' servicemen on special installations or maintenance problems. They are equipped to counsel on any problem confronting a retail dealer. Service discussion meetings are regularly held for dealers and servicemen.

The Rapid Thermogas Co. holds no contracts with its hundreds of dealers, says Mr. Haas. "They stay with us because they are satisfied and feel that it is to their advantage to stay."

...ne fact that the company rarely

loses a dealer is proof enough that "superior service" does not go unrecognized.

Here are some examples of company services, besides the training school, which keep its dealers satisfied: Locating and establishing new retail dealers, working out retail advertising or promotion campaigns, financing dealer growth, store demonstrations or promotions, field sales assistance, periodic dealer meetings in gas plant areas for instruction on new products, the replacement, repair or repainting of damaged or worn cylinders owned by dealers at no charge to them, and the testing of new appliances offered by manufacturers.

Rapid Thermogas believes that no

student, is designed to give the instructors an idea of the general competence of the group. After going over the test, which asks such questions as, "What is the specific gravity of vapor propane gas?" and "Is it hazardous to install water heaters in bathrooms and sleeping rooms?" The instructors decide just what subjects should be stressed during the week.

Here is an outline of each day's schedule, with a written test at the close of each period:

Monday—Gas products and their chemical and physical characteristics. Pressure regulators, house line pipe sizing. Laboratory demonstrations.

Tuesday—Safety practices. Laws, rules and regulations. Clothes dry-

There's an accent, of course, on safe technique, which includes "check and double check" methods. Its proved value is something of which the company is proud.

The course is a tough one, and both the instructors and students know it. In fact, some 15% of the students fail to pass and are denied the school's coveted diploma, which certifies that they are qualified to do service work.

"These certificates are important, especially to the new dealers," says Mr. Crippen. "They are valuable proof to new customers that the dealer is competent to handle the work."

The company has found that many of its newer dealers advertise the fact that their servicemen are graduates



Rapid Thermogas Co.'s main office and bulk plant are located in Des Moines. This is where the service training schools are held. The company also offers night courses in the field.



Students, working on oven mockups in the service training school, are gaining knowledge of oven controls. Ovens are hooked up to two 12-lb cylinders.

appliances should be accepted for dealer distribution unless they pass rigid tests for safety, efficient performance, servicing convenience and user benefits. Thorough tests are conducted in the company laboratory by Instructors Crippen and Manning.

The task of getting new dealers into the L. P. gas business is aided immensely by the service training school. New men, with little or no previous training, look to the school for the basic skills, knowledge and confidence necessary to do a creditable job for their customers.

Jim Crippen realizes that few of his students have the same background when they begin the service course, and he has tried to overcome this discrepancy by learning the first day just what his new class does know.

A written test, given to each new

ers. Practical work on dryer repairing.

Wednesday—Water heaters and water heater controls. Automatic gas ranges. Poultry brooders.

Thursday—Ranges and range thermostats. Practical work on thermostats and water heater controls.

Friday—Practical service work on various appliances and regulating equipment. Miscellaneous discussion. Final examination.

The course is made up, in large part, of practical work on the various appliances, as the above schedule outlines. Regulators, oven controls, thermostats and every other device that can possibly give a customer trouble are deliberately tempered with by the instructors. Then the students apply their newly-acquired knowledge in an effort to locate and repair the trouble.

of the Rapid Thermogas training school. The certificates can be found framed and hanging in many a dealer's office.

To win the diploma, students must pass each of the five written examinations given during the course in addition to proving their ability to do the practical repair work. Beginners find the school especially tough.

The problem of taking new, untrained men into the school has created a minor dilemma for the company and a bit of controversy among the servicemen.

"We find that many of our more experienced students say that we should compel all dealers to take the course immediately upon entering the field, or at least within six months after starting business," Mr. Crippen explained. "But then our newer men write us that, although they learned

a great deal in the course, they feel that they should have had more experience on the job before attending school."

On the whole, though, student comments offer little but glowing praise for the school and its instructors. Typical notes written on the final examination papers run like these:

"Truthfully," said Raymond Yotty of Kalona, Iowa, "I can't suggest any changes in the course. I'd like to come back again."

Said Martin Driscoll of Sabula, Iowa, "Thanks very much for the patience you fellows have with students like me."

In more detail, David T. Davis of Cedar Rapids, Iowa, commented, "I would like to see a law passed that

having no relation in origin to the gas installation on the premises. In only one case out of the 41 was the dealer held even partially responsible because of incorrect or faulty installation or maintenance. This dealer was not one of the 539 persons who had attended the service school.

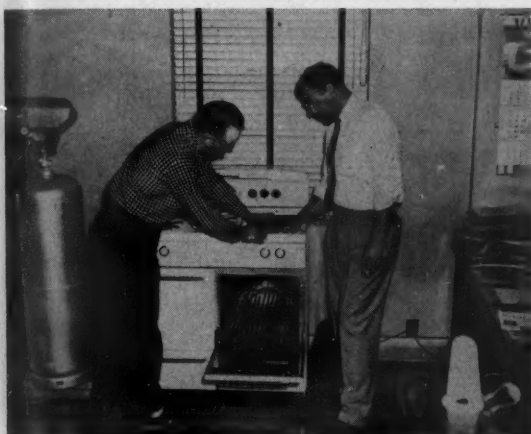
To keep a sharp eye on accidents, the company has instructed each of its dealers to report immediately, on a printed form, any accident or fire which occurs in a customer's home, no matter what the cause. This is to permit the insurance company to determine whether or not the gas installation or appliances were in any way a contributing factor to the cause.

In addition to the service school,

Crippen says that of the many suggestions made by students, one of the most frequently repeated is the request for a school in the form of an advance course.

A former student, Bill Hemphill, wrote recently that he believes a "refresher course should be held periodically, with an examination at the beginning of each course to see what help each serviceman needs most."

The company is making plans now for a change in the school. Just what will be done hasn't been decided definitely. The company does intend to cut the number of schools it holds annually to only four. Plans for a more advanced course for those who have taken the basic course, and for instruction in the servicing and re-



Bob Manning (right), assistant service manager and a training instructor, explains the operation of a pilot light assembly on a gas range to student.



The two instructors stand at the demonstration bench as they discuss and demonstrate flame values by using various sized pipes in background.

everybody who delivered or even moved gas off a dock would have to attend a course like this one. A lot of people don't realize how much they are endangering themselves and others by handling gas without the proper training and experience."

Speaking for the company, concerning one of the most satisfying results of the school—the company's outstanding safety record—Grant Haas said not long ago, "The general accident and fire record of the company is very favorable, and this is due in large measure to the effects of the school instructions and also to the field service training and assistance rendered by the field force."

That safety record includes the company's dealers which service more than 150,000 installations. In the past five years, only 41 accidents or fires have been reported, many

which takes a class once each month except during July and August, the company also offers night courses in the field for servicemen and dealers unable to leave their businesses long enough to attend the Des Moines school. These courses are held at one of the various company bulk plants about once a month or whenever a group of servicemen makes the request. The course lasts five nights and offers about half the subjects covered in the Des Moines school. There is no practical work, but the lectures are well illustrated with charts, diagrams and models.

"It's popular with the dealers," says Mr. Crippen, "and it makes a good refresher course for students who like to brush up on what they learned in past years at the home office school."

Speaking of a refresher course, Mr.

pairing of new appliances as they come on the market, are also under way.

"We started the school five years ago," Jim Crippen points out, "because we wanted our dealers to be able to give our customers the best possible installations and see to it that they receive the greatest benefit from the gas they use."

The record shows that the school has done well in fulfilling the requirements set up for it. A big majority of the company's affiliates has sent men to attend the school, so there is no longer the necessity to offer the basic course as often as previously.

As Grant Haas has said, it is hard to measure the value of a service training school in terms of dollars and cents, but in terms of confidence, skill and knowledge, "we consider the school worth its cost."

Tobacco Curing Research

Favors L.P. gas



Typical L. P. gas stove used during the tobacco curing research carried on at the tobacco laboratory of the Connecticut Agricultural Experiment Station in Windsor, Conn. Essentially, stoves were built around burners similar to those used on kitchen gas ranges.

RESearch in tobacco curing has opened new vistas for liquefied petroleum gas. Experiments carried on recently at the tobacco laboratory of the Connecticut Agricultural Experiment Station in Windsor, Conn., have revealed distinct advantages from the use of L. P. gas.

Because of the disadvantages attached to the traditional use of charcoal in tobacco curing, growers in the southeastern parts of the United States began to experiment with L. P. gas for curing. Such success resulted that two consecutive years of experiments were planned and carried out with shade-grown tobacco in Connecticut.

Curing is one of the most critical phases in the production of tobacco. The grower may have raised a healthy group of seedlings, transplanted them to the field with success, fertilized them properly, warded off the insects and diseases, and finally harvested a top quality crop. But if things go wrong in the curing shed,

this summer-long effort is wasted. The tobacco may succumb to pole rot or it may "grade out" so poorly that the grower suffers a loss.

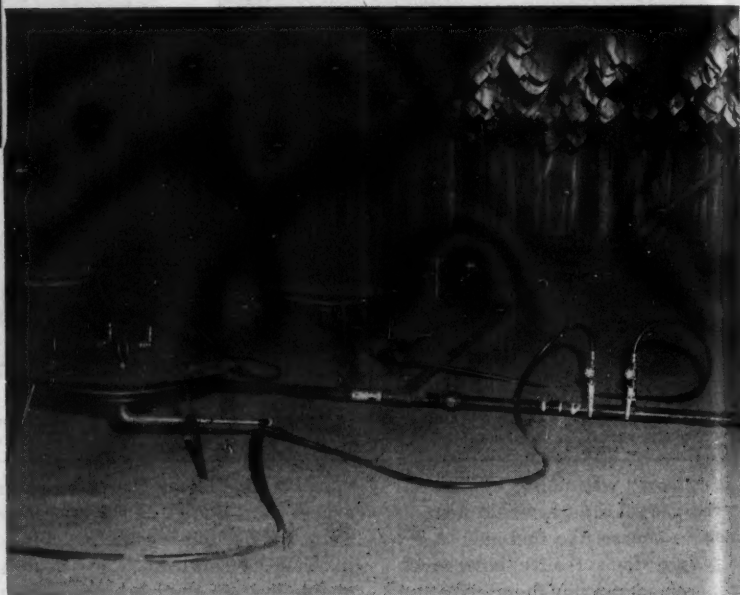
Tobacco curing, by which the leaves are changed from a raw green to a dry rich brown, is essentially a chemical process. After his crop is harvested, the grower strings the tobacco on laths and hangs it in sheds where it is allowed to dry and cure over a short period. The chemical changes that take place during the

curing can produce either a good or bad leaf.

The main problem in curing is removing water from the green leaf quickly, yet allowing sufficient time for the chemical changes necessary to produce a good product to take place.

Long ago it was discovered that nature needed some help from man in producing good tobacco; a completely natural cure does not yield as good quality tobacco as a fired cure.

"Because of the disadvantages attached to the traditional use of charcoal in tobacco curing, growers . . . began to experiment with L. P. gas for curing. Such success resulted that two consecutive years of experiments were planned and carried out with shade-grown tobacco in Connecticut."



—Photos courtesy Connecticut Agricultural Experiment Station

Portable piping system showing pipe entering shed from supply tank. Main pipe sets on shed floor, while gas stoves are hooked to supply lines.

The main reasons for firing are to control the pole rot, caused by a fungus that grows when the leaf is moist, and to accelerate leaf wilting and chemical changes.

Lump and processed (briquet) charcoals have been the standard fuels for heating sheds of tobacco. These fuels, which give off a dry heat, are burned in salamander-type stoves, small pans, or floor pits. Use of charcoal requires considerable labor and attention in replenishing fuel and, to guard against a conflagration, an experienced fireman is needed. Aside from requiring extra workers to tend the fires, charcoal gives an uneven heat—high as the fire is replenished, low as the coals die.

Because of these disadvantages, growers began to experiment with L. P. gas in the firing sheds. Tests using propane in curing bright-leaf tobacco were conducted in Oxford, N. C., in 1947. Beginning with the 1950 season, L. P. gas was used on a small scale in the shade-tobacco districts of Florida and Georgia and, more recently, propane has heated Kentucky barns.

As a result of these early small-scale experiments and as a phase of an expanded curing research program, plans were made to study the engineering principles involved in the application of L. P. gas to the curing of Connecticut shade-grown tobacco. This type of tobacco is grown under a tent resembling cheesecloth and is widely known for its superior quality as a wrapper leaf

for fine cigars.

It was apparent that firing with gas would reduce labor costs and there was the possibility that additional savings in fuel costs as well as improved leaf quality might result.

Experiments were carried on during two successive years by W. A. Junnila, Bureau of Plant Industry, Soils, and Agricultural Engineering; A. B. Pack, Connecticut Agricultural Experiment Station, and M. S. Klinck and A. B. Barton, Storrs Agricultural Experiment Station. The object was to compare liquefied petroleum gas with charcoal briquets as a source of fuel for curing shade tobacco.

In general, the plan was to fire two barns of tobacco, one with gas and the other with charcoal. The barns, as identical as possible, were located in Windsor, a short distance from the tobacco laboratory of the Connecticut Agricultural Experiment Station.

The gas-supply system consisted of two batteries of 20 100-lb cylinders

the first year of the experiment, but was changed to two 50-gal. tanks the second year.

The first year the gas-distribution system consisted of a 1¼-in. pipe manifold along both sides of the barn. The supply tanks fed into the system at the center of one side, while an underground header made a connection to the manifold on the other side. The stoves near the walls of the barn were fed directly from valves tapped into the manifolds. Underground take-offs supplied the two center rows of stoves.

The second year the distribution system was changed to a 1½-in. underground manifold running the length of the barn along the center posts. Two stoves were fed from each valve at the center posts. Copper tubing connected the valves to the underground manifold.

Essentially, the stoves were built around burners similar to those used on kitchen gas ranges.

The studies were carried on with the cooperation of a grower of shade-grown tobacco. The grower furnished the tobacco and the harvesting and stringing crews. Two crews were used so that the barns could be filled simultaneously. As the tobacco was brought from the fields, the even-numbered loads were delivered to the gas-fired shed and the odd-numbered loads to the charcoal-fired shed. The firing schedules for both sheds were identical and a careful attempt was made to maintain the same temperature in both.

To determine the results of the experiments, quality studies were made. These began with the placement of laths of tobacco in 18 different locations in the sheds; the locations selected were the same in both the gas and charcoal-fired sheds. Past experience has shown that tobacco

TABLE 1

Fuel Costs For L. P. gas and Charcoal

	First Experiments		Second Experiments	
	Gas	Charcoal	Gas	Charcoal
Value of tobacco per pound	\$ 4.78	\$ 4.39	\$ 3.14	\$ 2.81
Capacity of sheds—acres	5.0	4.5	5.0	4.5
Total fuel consumed (gallons of gas; pounds of charcoal)	1415	9800	1388	13,520
Total cost of fuel	\$300.00	\$392.00	\$291.00	\$608.40
Cost per pound of tobacco cured	\$ 0.06	\$ 0.09	\$ 0.06	\$ 0.13
Cost of fuel per acre	\$ 60.00	\$ 87.00	\$ 58.20	\$135.10



Two 500-gal. tanks were used to supply gas to the tobacco sheds during the second series of experiments, as they proved more satisfactory than the two batteries of twenty 100-lb cylinders used during the first experiments. Pressure regulator is visible above. Tanks were mounted on skids to facilitate easy moving.

does not cure uniformly throughout a barn. After curing, the tobacco, which was tagged for identification purposes, was processed along with other tobacco in the usual manner, then separated for grading purposes.

In addition to grading, the tobacco was checked for pole rot and observations were made on the general appearance of the cured leaf. A record was kept of the amount of fuel consumed—both charcoal and L. P. gas, and the number of man-hours of labor spent in the two firing operations.

The grading results of the experiments indicated that the use of L. P. gas produced a larger amount of the better grades of shade-grown tobacco and that the gas-fired tobacco had an average value of 40 to 48 cents per pound more than the average value of the tobacco cured with charcoal.



Curing tobacco with charcoal fires. Charcoal may be burned in salamander-type stoves, floor pits, or in small pans, as shown above. Extra workers must always be on hand to tend the charcoal fires.

Nearly twice as much of the best tobacco came from the gas-fired shed.

The experimenters felt that the inherent quality of the crop was more fully realized when the gas-firing system was used than when the tobacco was fired with charcoal. The steadier, more uniform heat that came from the L. P. gas fire and the moisture in the combustion products caused a better blending of the leaf colors. The more variable heat from charcoal can cause uneven drying and incomplete oxidation in the leaf cell.

The results showed that a crop that had low quality due to growing con-

ditions in the field was not greatly improved by either means of firing and that both L. P. gas and charcoal firing were adequate in controlling pole rot.

The texture of the leaf surfaces, which is an important property in evaluating the quality of shade tobacco, was much better in the gas-fired tobacco. This leaf felt more pliable, smooth and silky in contrast to the rather rough, stiff and dry texture of the tobacco fired with charcoal.

The total cost of fuel for the gas-fired shed was about \$300. The shed was fired for 150 hours, which is an average length of time in most seasons. The gas-fired shed contained tobacco from five acres, which brought the cost of gas firing per acre to \$60.

The amount of charcoal consumed during the second year of testing was regarded as excessively high; consequently, the cost was higher than average. The total cost of the charcoal varied from \$392 to \$608. The charcoal-fired shed contained tobacco from 4½ acres, making the average cost of charcoal per acre near \$110.

For an analysis of the approximate fuel costs of firing with L. P. gas and charcoal briquets, see Table 1.

The initial cost of the gas-firing equipment, which was about \$1000, was not considered in arriving at the comparative costs of the fuel, nor

Gas, Coke Curing Costs About Equal

The cost of curing tobacco with coke or L. P. gas is about the same, according to the University of Kentucky College of Agriculture and Home Economics.

Says an issued statement: "Although the cost of L. P. gas fuel is higher than coke on a heat content basis, the greater efficiency of gas-burning stoves brings the costs of the two fuels to nearly the same figure.

"Several farmers during the past two years have used both coke and gas in different barns during the same curing season and report the cost of gas heat is the same or only slightly higher than when coke is used. If labor is taken into consideration, gas is a less expensive way to heat the curing barn."

was maximum use made of the firing equipment. Since it is portable, it could be used in more than one barn. This is a factor that will be considered in future research.

With gas firing it was only necessary for the fireman to check the condition of the tobacco, the shed temperature and the stoves for a few minutes each hour. In the charcoal sheds the bulk of the fireman's time was spent in tending the fires. It was apparent that one fireman using the gas-firing system could handle as many as four or five sheds if they were located reasonably close to each other. Firing with gas should require only 20% to 25% as much labor as ordinarily required with charcoal firing. The charcoal firing also may require a more experienced fireman than does the gas firing.

That L. P. gas is generally superior to charcoal briquets as a fuel for firing tobacco curing sheds has been proven by the research carried on to date. The use of L. P. gas has now been widely accepted by tobacco growers. More research, under the guidance of Dr. A. B. Pack, is being carried on this year with L. P. gas at the Windsor tobacco laboratory. Experimenters are now trying to find out how best to manipulate the fuel to turn out as fine a tobacco product as possible.

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How to Make Visual Cylinder Inspections

Inspection should be made only by a competent person who is thoroughly experienced in the care of L. P. gas cylinders.

You will need some way of rotating the cylinder so that all exterior surfaces and the joint between foot ring and bottom head can be closely inspected. The handy rack illustrated here can be easily built or can be purchased from Western Welding and Mfg. Corp., Milwaukee, Wis. It raises the cylinder



waist high... permits the cylinder to be rotated on rollers.

Visual inspection is good for five years — and each cylinder must be given a new and complete inspection at the end of each five-year period. Such visual inspection must start when the next periodic pressure test is due.

You must keep permanent records for each cylinder, showing results of inspection and disposition of cylinder. You keep on file data sheets on which you must record the following information. (Note: These records may be checked at your plant from time to time by a representative of the Bureau of Explosives.)



Points to Inspect and Record on the Data Sheets:

- (a) Date of inspection, including the month and year.
- (b) ICC specification number.
- (c) Cylinder identification:
 1. Registered symbol and serial number.
 2. Date of manufacture.
 3. Ownership symbol (if needed for identification).
- (d) Type cylinder protective coating — whether painted, galvanized, etc.
 1. Statement as to need of refinishing or re-coating.
- (e) Conditions to be checked:
 1. Check all seams, corroded areas and other places where leaks may occur.
 2. Corrosion—carefully check the areas most subject to corrosion, such as inside the foot ring and the bottom head. Be sure to remove all scale, rust and caked paint with a scraper, wire brush or light sand or grit blast, so you can see the full extent of

corrosion. If corroded areas are deeply pitted, or if conditions indicate the possibility of leakage, discard the cylinder.

3. Dents or gouges. Such deformations are caused by a blunt object, and the thickness of the cylinder wall is not impaired. If such dents are very large, however, or deep, or have sharp angles, they render the cylinder unfit for service.
4. Gouges or digs. These deformations are caused by a sharp object in such a way as to cut into the metal and decrease wall thickness. Unless these are only scratches, they also make the cylinder unfit for service.
5. Broken or damaged foot ring or protective ring. If the foot ring needs re-welding or replacing, return the cylinder to a regular manufacturer of this type of cylinder for repair and re-heat-treatment. Such repairs should not be attempted by anyone who is not approved by the Bureau of Explosives.
6. Fire damage. Basically, you should destroy any cylinder that has been bulged or deformed by fire—you should return to the cylinder manufacturer, for re-heat-treatment and retesting, any cylinder that has had paint scorched or galvanized finish discolored by fire. Also, replace the valve and safety devices on any cylinder that has been in or near a fire.

(f) Disposition of cylinder.

1. Returned to service.
2. Scrapped.
3. Returned to cylinder manufacturer for repair.

How to Mark Inspection Date on Cylinder Head:



A cylinder which passes inspection should have the new date stamped on the head, in the same way as you have been marking the retest date—except that the letter "E" is to follow the date (month and year), to indicate re-qualification by the external inspection method.

Your Rule to Remember:

The visual inspection method now authorized by ICC is good for a 5-year period. Inspection should be carefully performed by an experienced person.

Courtesy of Pressed Steel Tank Co.

Safety in Delivery Truck Design, Maintenance and Operation



SAFETY MEETING

Date _____
Time _____
Place _____



HOW TO USE THE SAFETY EDUCATION SERIES

This suggested program is a guide for the next SAFETY MEETING, based upon Article No. 18, "Your Prime Safety Job — Keep Yourself Safe." After the meeting the SAFETY POSTER which appears on the opposite side of this page should be posted on your bulletin board as a reminder for the meeting to follow, based upon the article in this issue, "Safety in Delivery Truck Design, Maintenance and Operation."

Suggested Program for Safety Meeting

For "Your Prime Safety Job — Keep Yourself Safe"

- 1 — Complete the attendance record, noting the absentees.
- 2 — Unfinished business. Report progress or disposition of all safety projects that were suggested or remained incomplete at the last safety meeting.
- 3 — New business. Are there any new ideas or suggestions that might make operation safer either at the plant or at customers' premises? The winter delivery season is coming up; how about getting the delivery trucks fixed up, safety-wise and otherwise, so they can go through the winter without being laid up because of work that could be taken care of in slack season?
- 4 — Discussion of "Your Prime Safety Job — Keep Yourself Safe."
- 5 — Announce date, study assignments, and any special instructions for the next meeting. This will deal with truck design for safety in delivery operations.

DISCUSSION GUIDE FOR

"Your Prime Safety Job — Keep Yourself Safe"

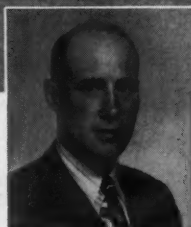
The effectiveness of your safety program to date should be revealed in the discussion on this assignment. If suggestions are many it indicates that there has been much that needed improvement. If there are few changes for the better proposed, then the operation is on a high safety standard or the men are not interested. Management should know the answer to this.

In the problems, Groups 1, 3 and 4 are quite personal in nature. It could prove embarrassing to handle the discussion of these matters on the wrong basis. For example, Group 1 covers a matter of family finances which the employee might not want to discuss before his fellows, yet it might be very desirable for him to talk it over privately with the manager. Our suggestion to the meeting chairman would be to emphasize the importance of avoiding personal accidents if possible, and providing proper protection against the financial burden of "off-the-job" accidents in case they do happen. Then the manager should invite any employees who have problems in connection with this to discuss them with him privately.

The questions in Group 2 open the season for potshots at the bosses and supervisory group. If the head men have done the job that should have been

done over the previous months, suggestions resulting from these questions should be few. If they are many, we are sorry, but the brass hats have it coming to them. Better luck next time? Luck hasn't much to do with this. Conditions are safe or they are not safe.

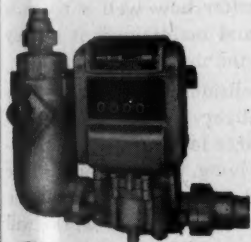
Group 3 covers the causes of more personal accidents than occur on the job. What to do about it is a problem. These home conditions are not subject to inquiry or supervision by company personnel, and only incidentally, as they relate to official codes such as electrical, plumbing, or building, do they come under municipal jurisdiction. But unless special attention is paid to home conditions, accident hazards, of which the employee is not aware, develop. The use of a check sheet periodically would bring these conditions to light. Why not have each employee submit a list of items in the home which should be checked? Each will base his list on his own experience, and any group of half a dozen employees should be able to secure full coverage of the danger spots. In the meantime each employee has concentrated for a period on the conditions on his own premises. Some companies find it profitable to duplicate these check sheets and ask each employee every few months to make his own safety inspection and make the needed improvements.



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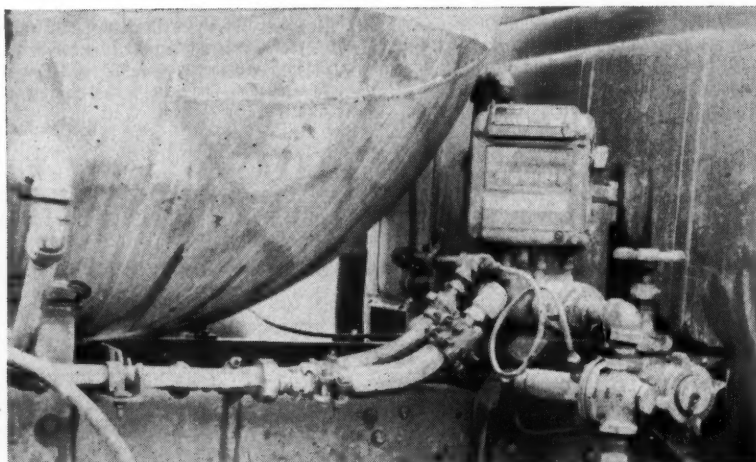
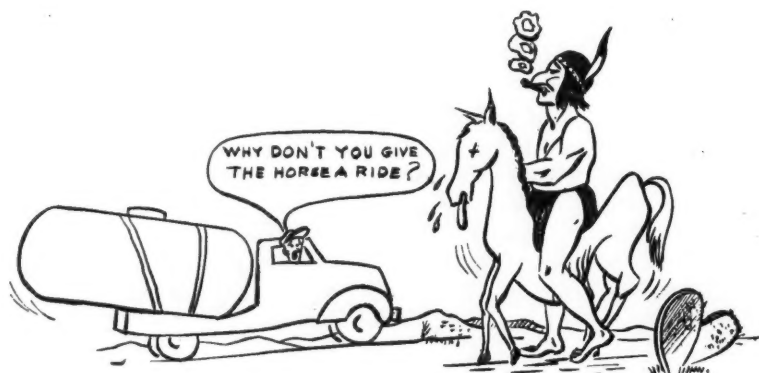


Accuracy You Can Bank On



Safety in Delivery Truck Design, Maintenance and Operation

By Carl Abell



Flexible sections ahead of meter and pump protect piping from leaks due to wear imposed by frame torsion.

A DELIVERY truck is safe only if it is designed and built with the proper features that will make its operation safe. That is the first chapter on the subject of safe delivery trucks. The second: there is no designer who has the genius to create a vehicle that will stay safe in service. It must be constantly maintained in safe operating condition. Then the third chapter: no matter how well a truck is designed and maintained, it is only as safe as the man who drives it.

So in considering the safety features of delivery trucks we must consider all three factors—design, maintenance, driving. Without sound basic design and proper equipment, the best maintenance in the world will not make a vehicle safe. And without the intelligent observation and attention of a conscientious driver, maintenance will not be good. These three elements of safe delivery vehicles cannot be separated. We must have them all, or we have nothing safe.

In planning the design of LPG delivery trucks, we have more than just the chassis to consider. The truck will carry a cargo which is flammable, and under some conditions may become explosive. Whether the truck is equipped to carry LPG in bulk or in cylinders, we must pro-



Paul L. May

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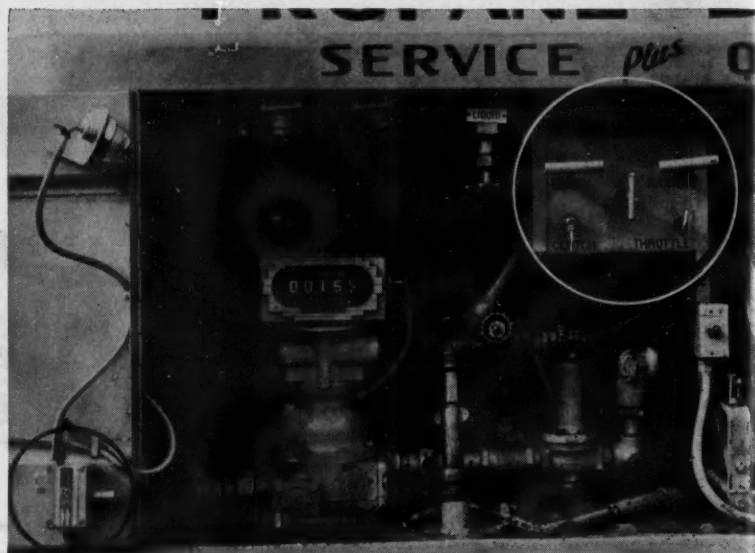
Sid Richardson
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vide the means to keep the cargo from developing hazards. Design for cargo handling should also be efficient, but we can not afford to allow considerations for greater efficiency to offset the provisions necessary for safety.

The primary consideration for safety is a chassis big enough to handle its load. Any truck can carry a bigger load than it can carry safely. Yes, the tires can be increased in size so an overload can be carried without too much strain on the rubber and rayon, but if the chassis is overloaded, so are the brakes, the frame, the springs and the axles. The basic "unsafeness" of the undersized unit can be minimized by driving it slowly, which nobody does. Sooner or later every overloaded truck meets a situation which overtaxes its strength in some respect, and then the best driving in the world is "too little and too late."

If a truck must be equipped with tires that are oversize for the chassis, either to get satisfactory tire life or to comply with the state highway regulations, that is the tip-off that the chassis is overloaded. Every such truck should be given the utmost care in maintenance, and its speed should be held down wherever the road surface is rough or there is any possibility that an emergency stop will be required, which includes too many places and too much of the



Switch on cabinet door operates horn when brake is released with door open (in black circle). Top valve handles (in white circle) must be in closed position before doors can be shut.

time. Drivers do not like the mental strain of babying equipment. Overloading a truck is as hard on the driver as it is on the truck.

A chassis designed with ample capacity to carry the load that is to be put on it may still have its relative safety diminished by improper balance of the load. The chassis was designed at the factory to carry 40% of the total weight, when loaded, on the front axle, and 60% on the rear axle. Axle strengths, brakes, and steering

are all worked out for this load ratio.

If the weight of the loaded truck is too far forward, the front axle will be overloaded. So will the tires and brakes. The truck will steer hard, resulting in driver fatigue, and increasing the chances of an accident from that cause.

If the load is concentrated too far to the rear, it will tend to lift the front of the truck when traveling on a rough road with full load, causing loss of steering traction and possibly even throwing the truck out of control. On icy roads this is still more important.

It takes good engineering to build a balanced truck, and it costs money in extra maintenance to operate an unbalanced truck. To say nothing of the possibility of extra accidents due to lack of balance.

With a chassis of adequate capacity, and the load balance properly calculated, we must put the chassis and the body together so one will not damage the other. A broken frame, whether it cracks in normal service or fails suddenly in an emergency, can create a bad accident under certain conditions. The majority of broken frames are the result of too solid mounting of a body (or tank) that is to rigid.

Let's consider for a moment. As the truck rolls down the road it passes over uneven surfaces which tend to twist the frame. And the



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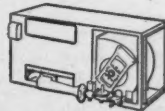
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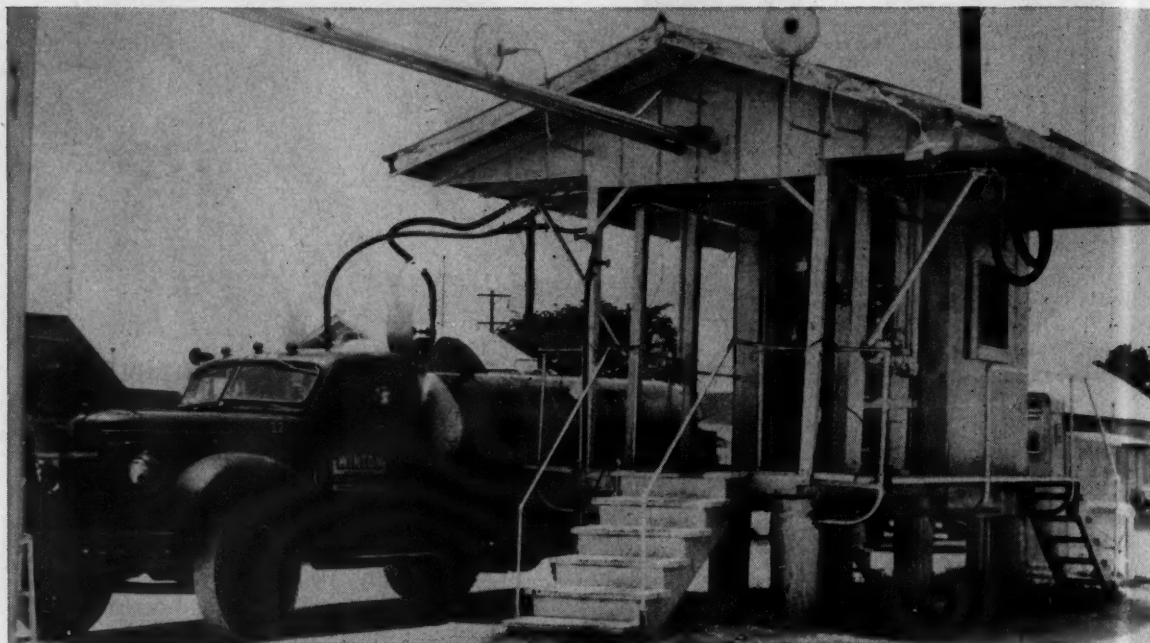
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frame rails are anchored inflexibly to the body or tank, the twisting of the frame is concentrated in a stress point at the front of the body or tank. Reinforcing the frame at this point helps, but a similar stress point of somewhat less violence is created at the front of the reinforcement unless it is carried forward to the front spring.

In this connection, let's look at the possibilities of mounting the body—particularly if it is a bulk tank—in some way so the normal flexing of the chassis frame can take place with-

engine in your automobile or in a truck. It is on some form of three point support, with flexible connections to the frame—pads or springs. The engine can move in the frame, and the frame can twist under the engine. Before this method of mounting engines was developed, welding or brazing the legs back on broken crankcases was big business. They were mounted tight on the frame, and the crankcase was the weakest link. Now we almost never see a crankcase with the mounting leg broken off unless the vehicle has

the frame, there must be some form of flexible connection between the two, or all the movement will take place in the joints of the piping. If the frame is fishplated, and the tank is mounted solid, with the pump and meter on the frame between the tank and the cab, there is still a slight amount of movement that must be taken up in the piping. Working joints are a fruitful source of small but annoying leaks. Any leak may become an active hazard, particularly if the tank is skirted. Because of this problem of leaks we find an in-



Filler valves and pressure relief valves are protected by special side plates and hinged cover over top.

out creating concentrated stress points.

A bulk tank is a cylinder, constructed of heavy steel. No torsional force coming up through the frame will ever twist that cylinder. If we weld four brackets on the tank and anchor them down solid on the frame, the portion of the frame between the anchorages will be just as inflexible as the tank. The frame stress will be concentrated at the front tank mounting. What can we do about it?

Let's look at another familiar case where a rigid unit is mounted in a similar frame with a torsional stress affecting the connections. Look at the

been in an accident.

Some bulk truck manufacturers provide flexible mountings for the tank on the frame. These mountings should be looked at periodically to see that they are in proper adjustment. They should not be tightened down solid, metal against metal, without any chance to move. A fraction of an inch of flexibility at each mounting point is the best insurance against broken frames. We must provide stops to keep the tank or body from sliding on the frame and shearing off the anchor bolts.

If the tank is mounted flexibly, and the pump and meter are mounted on

creasing number of bulk trucks, both factory standard and user-designed models, with the pump, meter, and all piping supported directly on the tank, using brackets that were installed during the fabrication of the tank. The pump drive is either a shaft from the power take-off equipped with universal joints, or a flexible driveshaft.

Mounting dual tanks presents a variation of the problem of torsional movement in the piping. Unless the tanks are welded firmly together by means of brackets, they will move with the twisting of the chassis frame. This will cause screwed joints in in-

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"TEST TUBES" FOR SKELGAS

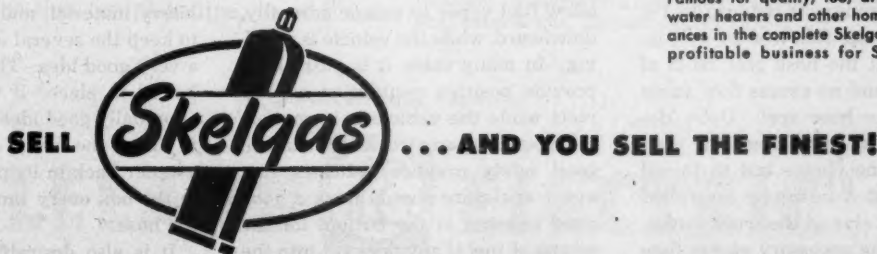
"Test Tubes"? Yes, in more ways than one this typical maze of steel tubing and distillation towers at the Skelly plant are indeed "test tubes" for Skelgas. Day and night, complex chemical and physical processes are going on within these vessels that help transform the heart of natural gas into the magic of Skelgas. And just as relentlessly, each vessel and its "passenger" is subjected to constant testing, testing—and more test-

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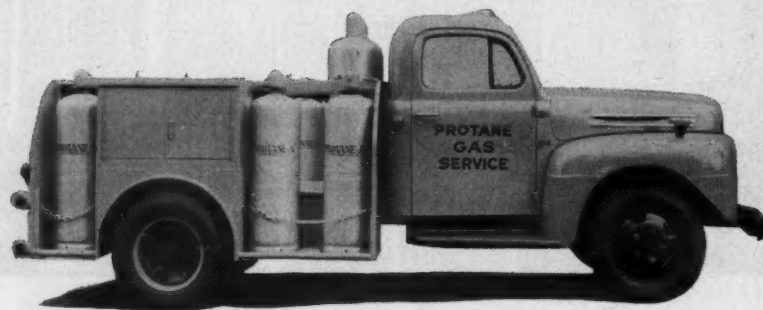
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terconnecting piping to move, eventually resulting in leaks. If the piping is put together inflexibly, any torsional movement in the tanks will tend to fatigue the metal in the pipes, and a crack may develop. If dual tanks are mounted flexibly in relation to each other, it is of utmost importance that the piping be designed so it can remain free from leaks in spite of the movement of the tanks.

Excess flow check valves at the bottom outlets of tanks are frequently rendered ineffective by restrictions further along in the piping. The valve will function as a safety protection if the amount of fuel passing through it exceeds the volume that it is designed to transmit. The piping to and

inlets to improve the appearance of the truck and provide shelter for the pump, meter, and hose. It cannot be denied that in an unskirted truck any gas escaping from a minor leak has less chance to accumulate into a hazardous concentration somewhere on the truck. On the other hand, exposure to the elements shortens the life of hoses, and presents greater risk of clogging the pressure relief valves with mud or ice.

A well-skirted truck with closed cabinets for the fuel dispensing equipment presents a very neat appearance, but unless it is very carefully designed it also provides pockets in which leaking gas may accumulate and produce very bad results. These



Special cylinder body with side mounts and cylinders thoroughly secured.

through the pump should always have more capacity than an excess flow valve located at the tank outlet. There should be another excess flow located ahead of the delivery hose, of the correct size to close in case the hose should be ruptured either by pressure or from movement of the truck.

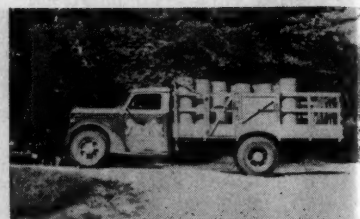
We recently saw a new bulk truck that came out of the factory with a 2-in. bottom outlet at the tank, after which the piping was reduced to 1¼ in. at the pump, followed by a ½-in. restriction at the hose reel, 50 ft of ¾-in. hose, and no excess flow valve ahead of the hose reel. Upon discovering these conditions the purchaser had no choice but to install a spring-loaded remote controlled mechanical valve at the truck outlet, and put in the necessary excess flow valve at the hose reel.

Opinion is widely divided as to the advisability of using skirting or cab-

jobs require scrupulous care in maintenance of piping and valves, and in spite of the best of care, leaks eventually develop.

There is also the possibility that a pressure relief valve might discharge. Sparks can occur from rough handling of doors, and if fuel vapor is present in flammable proportions, ignition may take place. Any closed cabinet into which fuel may seep should be vented in a way that will allow fuel vapor to escape normally, downward, while the vehicle is standing. In many cases it is possible to provide positive ventilation of cabinets while the vehicle is in motion.

If your company trucks are skirted, good safety practice indicates that every enclosure should have a good sized opening in the bottom for the escape of fuel if any does get into the cabinet. Not just a half inch drill hole, either. A cabinet housing the pump, meter, valves and hose should



The bare essentials in cylinder delivery—rack body with side and rear gates and plenty of anchor chains.

have a hole at least 6 in. square through the lowest level of the cabinet floor. If needed to prevent tools, adapters and other small items from falling through, this may be covered with heavy hardware cloth. Such an opening may be made into a positive ventilator by cutting on three sides of a rectangle in a position where the flap released by the cutting may be bent down into the airstream under the truck to produce suction. (In a number of cities the fire authorities require such ventilators in the trunks of converted taxicabs.) Any pressure relief valve in one of these cabinets, or underneath the tank where its discharge may seep into an enclosed space, should be vented upward by means of substantial tubing ending above the skirting.

Any cabinet in which tools, tire chains, the jack, or any other movable steel items are carried should be completely isolated from any source of escaped gas. Under rough treatment, as in negotiating rough roads, or even when a man is working fast, there is a chance that steel striking against steel might produce a spark.

Likewise, when adapters are carried in a cabinet housing the hose and other points of possible fuel escape, like valves, pump and meter, the adapters should either be of brass construction, or they should be kept confined in some sparkproof arrangement. A small wooden box made of heavy material, and with separators to keep the several adapters apart, is a very good idea. The box should be bolted in place. If this is provided, an equally good idea is for the driver to form the habit of putting each adapter back in its particular groove in the box every time he takes it off the hose.

It is also desirable to have some means of protecting the connector on the end of the hose from damage and dirt while in transit. Many operators



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provide a blank fitting on the bottom of the cabinet, to which the end of the hose is connected whenever it is not off for the transfer of fuel into the customer's container.

Cabinet door latches should be quick-acting, positive, and of a type that will not release from jolting on the road. The door of a side cabinet, if it comes unlatched and swings as the vehicle rolls, is a potent source of hazard to other vehicles. Some operators answer this problem for sure by equipping the doors with switches such as are commonly used on the front door posts of automobiles to control the step lights. These may be connected to a blinker light on the instrument panel, so the driver will be warned of an open door in case he has forgotten to disconnect the hose, or to take a trip around the truck to see that everything is ready for the road.

A clever variation of this is to use a spare automobile horn instead of the indicator light, wiring it through a contact switch on the emergency brake. If the horn sounds off when he opens the cabinet door, the driver knows that he forgot to set the hand-brake when he stopped. If the horn sounds when he releases the hand-brake to drive away, it tells him he forgot to close all the cabinet doors.

Bulk truck tanks must have, at the fuel outlet, either an excess flow valve or an internal mechanical valve positively controlled by either mechanical or hydraulic means. For various reasons many operators prefer the internal mechanical valves, but they always present this problem: will the driver remember to close the valve after he has made his delivery? If the valve control handle is mounted so that, when in the open position, it will project through the cabinet door, this problem is solved. He can not close the door until the valve is closed.

Whether on a reel, or merely coiled in the cabinet or on a ledge, provisions should be made so the hoses will not be dragged over a sharp ledge. Hoses are pretty strong, but they can not survive too much gouging by such things as metal edges. Rollers are easily made and inexpensive, and will save many times their cost by preventing this needless wear and weakening of hoses. A bursting liquid hose can produce a sizeable

hazard, particularly if the escaping stream is just too small to operate the excess flow valve. It takes time to close the hand valve back of the break.

The entire plumbing system should be looked over daily for evidences of leaks. A frost spot at any point is clear evidence of the escape of fuel, and even though the leak is minor, it



Cylinder truck with welded tubular outside rails and power operated lift gate.

should be fixed at once. If no frost spots are visible, but there is a persistent odor of escaping gas, the leak should be located just as you would find one in a kitchen—by testing the joints with soapy water. Packing boxes of valves are frequently subject to these minute leaks, which never improve by themselves.

Each tank must have at least one pressure relief valve at the top. On the older tanks many of these valves are of the type in which the working element is above the surface of the tank. Striking this valve body might break it off, with the very undesirable result of allowing the escape of all the fuel in the tank. To overcome this possibility, certain manufacturers provide a recess into which the valve is threaded so it is below the level of the tank surface. This recess may fill with snow or rainwater, and as the result ice can sometimes form in the valve. Or during dry weather there are locations where a good deal of dust might accumulate in the valve body, later getting wet and then caking into an obstruction that would increase the pressure required to operate the valve. None of these conditions is desirable.

The new type valve with all mechanism inside the tank is now standard

equipment on new bulk truck tanks, and if possible these should be installed in place of the obsolete type on the older tanks. Even these should not be left exposed to the processes of nature. They should be protected with loose fitting rain caps to prevent the entrance of water or dirt. Pressure relief valves not in recesses should be protected by raised steel guards.

Cylinder trucks have had much less attention from the standpoint of protecting the cargo than have bulk trucks. The majority are "flattracks" with ropes or chain binders to secure the cylinders and keep them in an upright position. While they are easy to load from a dock, a plain flatrack presents several problems of personal safety. The driver must be continually climbing in and out, and lowering his cylinders from the height of the bed. That's tough work, and in wet or icy weather the floor is likely to be slippery. The plain wood floor has fair traction except when icy, but it quickly wears through unless protected in some manner.

Some operators provide this protection by laying a plywood upper floor over the truck bed when new, and replacing it when it wears out. Others lay a metal floor, which if smooth is hazardous when wet, and if pressed into a non-skid pattern is heavy and expensive. Other operators use a rather good compromise by screwing down strips of steel a few inches apart, and lengthwise of the floor. These strips protect the wood from wear, and allow the driver the traction advantages of the wood surface. The hazard of working on metal floors in wet weather with rubber heels or some of the composition soles should be guarded against.

Some operators have built special cylinder trucks with dropped steps to carry a row of bottles at lower level along each side of the truck. These side mounted bottles are very easy to unload at the customer's house, but the loading of the filled cylinders on the truck involves a great deal more work. The cylinders must be lowered from the dock to the level of the step, and moved along the length of the body.

Various other combinations have been worked out for additional safety and to minimize the work and

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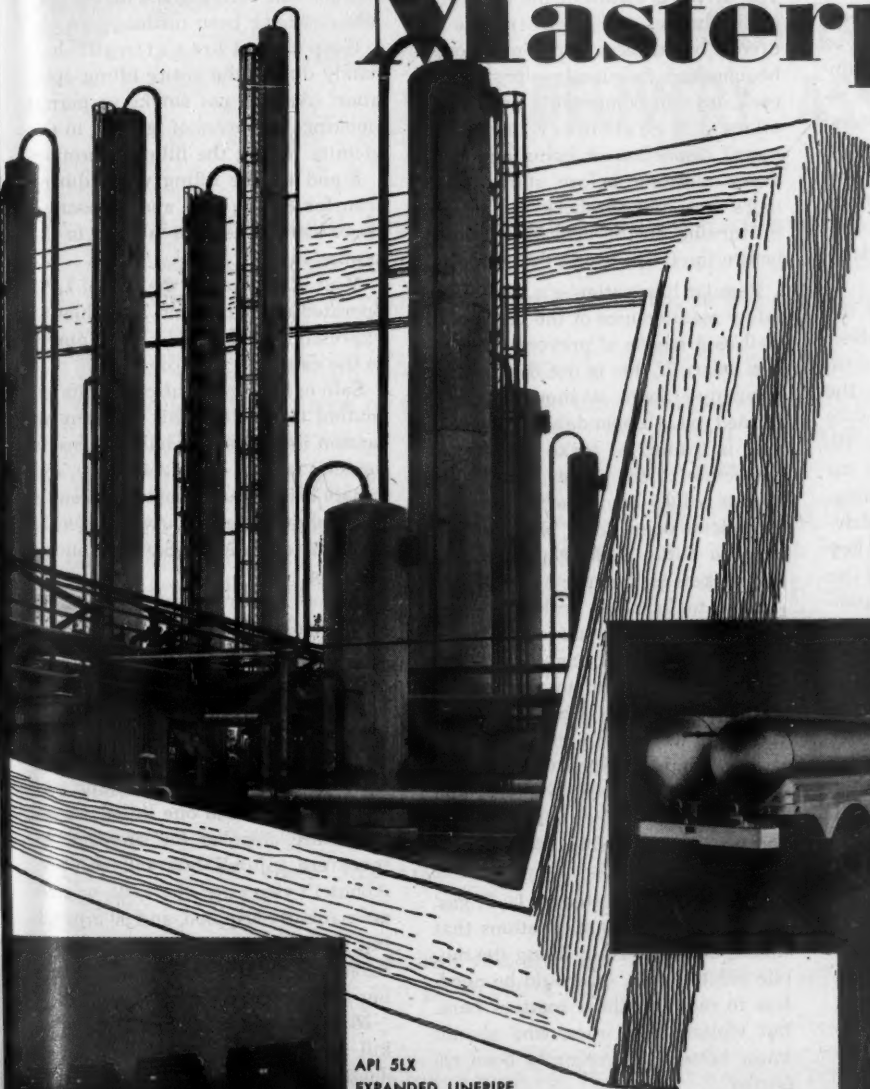
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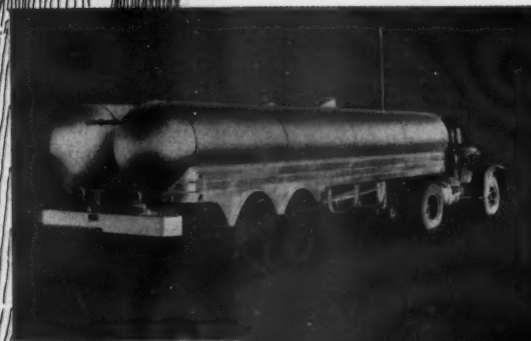
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hazard of lowering cylinders from the truckbed to the ground. Increasing use is being made of elevator type tail-gates, on which the driver, cylinder and handtruck all ride down together. These offer both ease and safety when used on level ground, but require extra precautions against either the load or the man slipping off when the truck is tilted. It is particularly important that these elevators have non-skid floors.

So far we have discussed only the features of truck design which affect the safety of the load, the risks involved in transporting fuel, or the personal safety of the driver while loading or unloading his cargo. He still has to get this truck over his route and back to the plant safely. The truck must be kept in safe driving condition. The driver is the key man in the safety-maintenance of the vehicle. He is on the truck, in position to see everything that happens, and in position to notice every condition due to use and wear which might develop into an operating hazard. It should be his responsibility to turn in a report *in writing* at the end of each day or shift which either states that the truck is OK or lists the items which need mechanical attention.

In a small operation, the driver may take care of many of the mechanical adjustments, small repairs, and tire changes. For purposes of auditing and possible future insurance needs it is still a good idea to note the service requirements on the daily report, and to add the details of what was done about it, and who did it. These reports are an inescapable part of the routine in fleet operations of all types that are large enough to maintain their own shops.

Many LPG operations are too small to do their own major truck maintenance operations, such as relining brakes, overhauling mechanical units, or replacing tires. When these

jobs are sent to garages or service stations, it should be the privilege and responsibility of the man who drives the truck to pass on the satisfactory nature of the work. It is his responsibility to drive the truck safely, and he should be satisfied that the truck is safe to use.

Tires, brakes, steering, lights and windshield wipers should be kept in perfect working order at all times. The driver is aware of the condition of the brakes and steering as he drives, but these other items should be checked frequently—preferably each day. In comparable fleet operations it is customary to make a visual inspection of lights and tires every morning before starting the day's run, and to check the wipers by turning on the operating control before the truck leaves the yard.

Regular lubrication is a part of the safety maintenance of the vehicle, as well as a means of preventing needless wear. If this is not done in the company's shop, it should be performed by a dependable individual who is trained to make a thorough inspection of the under part of the chassis while he is performing the lubrication operations. He should be alert to notice leaking grease seals and gaskets in the gear housings and engine, to look for broken springs, excessive wear in universal joints, king pins, steering connections and spring shackles, and to watch for damaged brake cables, rods and tubes, as well as leaking hydraulic brake cylinders. Such watchfulness will frequently detect conditions that need correction before failure occurs, and may prevent accidents or breakdowns.

If the truck operates on L. P. gas, there are certain precautions that should be observed in filling the mobile vehicle tank. It should be needless to mention these matters here, but violations by men who should know better have recently been reported.

Never put propane into a butane tank. The pressure relief valve, if legal for the strength of the butane tank, will not hold the pressure of propane or commercial mixture on a hot day. And never use a "bastard" tank. In case of a vehicle fire, the insurance people are going to look into this. No obsolete tanks should ever be transferred to new trucks

without making sure that they conform to present standards.

Shut off the engine before beginning to fill the tank, and do not start it again until the filling is completed and the hose disconnected and hung where it belongs.

Use outage valve to determine proper fuel level, and *do not overfill*, even in cool weather.

When filling is completed, check all caps and valves to see that proper closures have been made.

Keep a filled fire extinguisher handy during the entire filling operation. And do not smoke or permit smoking or sources of ignition in the vicinity during the filling operation.

Stand by the filling valve during transfer of liquid, and disconnect hoses as soon as tank is filled to the proper level.

Most states forbid the use of LPG operated air horns, and Pamphlet 58 expressly forbids any L. P. gas piping in the cab.

Safety operation requires infinite attention to details. This constant attention develops safe habits. Unsafe vehicles can not be driven safely, and unsafe driving has disastrous results. The following report was recently given at a National Safety Council meeting:

"Since America was born, 180 years ago, about one million of our people have been killed in wars. Since the advent of the motor vehicle, 50 years ago, another million have been killed in automobile accidents, and right now we are killing them at the rate of one million per 25 years. For each one killed, about seven are crippled for life, and 40 more are injured but will recover. About 15 years ago the ratio was 10 permanently crippled, and 90 injured but later recovered, for each death. Safety authorities blame this increasing death ratio on speed."

Nowadays we hit them harder, and kill them dead. Most of these deaths and injuries could be prevented by careful maintenance and greater attention to safety and courtesy while driving.

Coming

Safety Article No. 20, which will appear in the September issue, will deal with safety in carburetor installations.



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Problems for Discussion at Nineteenth Safety Meeting

This is one of the subjects in which the problems and answers are largely individual with your own company fleet. Some of them may cover points that have been overlooked in the design or selection of the delivery vehicles. Others may put the boss "on the spot." We hope not, but if that is needed, we hope that improvements will be made.

This subject is not presented with the idea that the delivery personnel are going to design their own trucks. Far from it! We merely believe that it is desirable to focus as much attention as possible on the features and details which make truck operation safe or unsafe. We have seen a great many trucks in the field, both standard factory models and "tailor-made jobs," in which some of the basic safety factors have been overlooked.

That many of the more experienced operators agree with this view is evidenced by the fact that their delivery vehicles are custom made to their own specifications, and these specifications differ materially from the usual factory jobs. They include more safety features, which necessitates higher production costs; they are definitely not competitively priced units. There is considerable variation in the detailed design of the trucks produced for different operators. That merely proves that our industry is still learning. These operators are basing their designs on experience, but not all have had the same experience. Nor do they all operate under the same conditions.

The point we wish to emphasize is that you should do the best you can to keep your present equipment safe, and in purchasing replacement trucks we hope you can find guidance in this assignment to enable you to provide better and safer trucks.

QUESTIONS

1 — What special precautions should be taken in driving an overloaded truck?

2 — What are the disadvantages of lack of proper load distribution between the front and rear axles of a truck?

3 — What is the cause of most broken frames in bulk tank trucks? Is this condition present in your delivery truck? Any suggestions?

4 — Does your bulk truck develop leaks in the piping? What, in your opinion, is the best thing to do about this?

5 — Should the piping from the outlet fitting of a bulk tank truck permit more flow, or less flow, than the capacity of an excess flow valve located in the outlet?

6 — If a self-closing spring loaded valve is used at the tank outlet, does the size of the piping to the pump make any difference in the functioning of the valve? How would you arrange the controls for such a valve for maximum safety and most efficient operation on your truck?

7 — In a skirted bulk truck, describe the features necessary to insure against the accumulation of

flammable or explosive vapors in the cabinets or pockets.

8 — Are there any places on your bulk truck where a roller would be of value in protecting the hoses against wear?

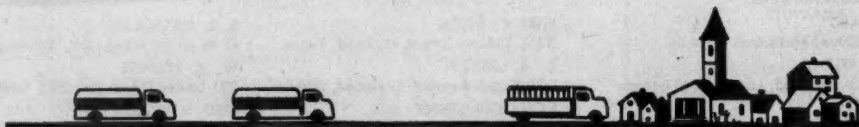
9 — What are the advantages and disadvantages of flatbeds and low side mounts in carrying cylinders on delivery trucks?

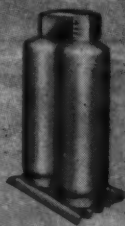
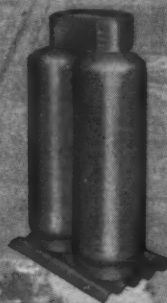
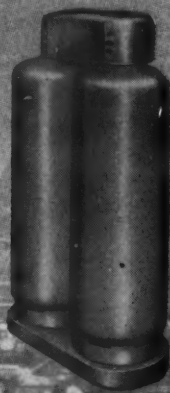
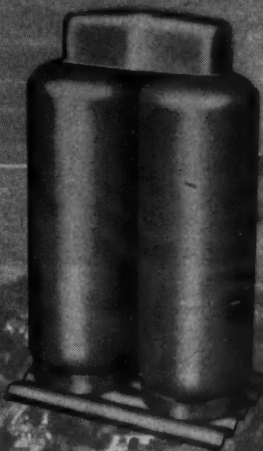
10 — In your operation, what would you consider the most desirable form of floor protection, as related to the hazard of personal accidents?

11 — Do you have a space on one of your daily drivers' report forms where the condition of the truck can be stated? Does it provide room to specify service work that may be needed?

12 — Does your company employ any form of supervision to see that drivers make proper inspections of their vehicles and report promptly any needed service and maintenance work? Is this supervision needed?

13 — Does your truck fuel tank conform to the state and local codes? And to Chapter IV of Pamphlet 58?





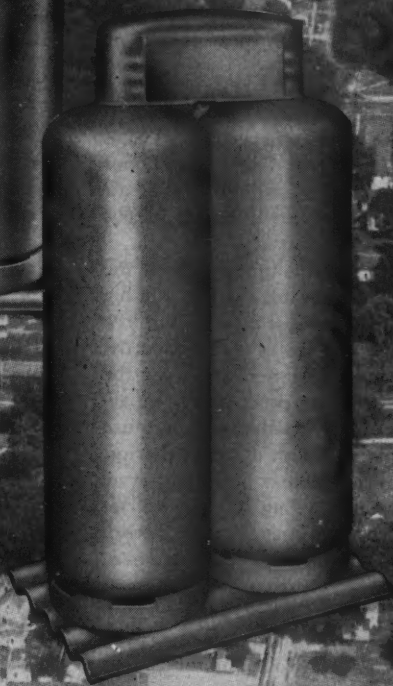
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LPG Helps in Making Second Largest Telescope



ATOP wind-swept Mt. Hamilton, 22 isolated miles southwest of San Jose in central California and some 4200 ft above sea level, L. P. gas is performing a vital service that someday may help to unravel mysteries of the universe. Here, on a University of California campus, the dome of a new \$2.5 million observatory has risen which, a few years hence, will house Lick observatory's 120-in. reflecting telescope.

Deep within the building, skilled technicians, under the guidance of Donald Hendricks of the Mt. Wilson observatory staff, are grinding and polishing a circular pyrex glass disc which, when completed, will become the 120-in. aluminized mirror which will be the heart of the world's second largest telescope. In the same room grinding and polishing are going forward on seven smaller mirrors which will be used in connection with the telescope.

L. P. gas is playing a most import-

ant part in this phase of the work. It is used to power a Servel Model CDE 114BP "all year" air conditioner which is teamed with a Servel air furnace having an input of 168,000 Btu and an output of 134,000 Btu.

What makes the unit so vital is the fact that temperature within the big grinding room must be kept within a two degree range of 70° constantly. Any greater variation can bring the precise polishing procedure to an abrupt halt. The constant temperature is maintained with a single thermostat which regulates both the Servel heating and cooling unit as well as the air conditioning unit. Both work as a team, insuring circulation of heated air to all parts of the room.

Even though every possible measure is taken to control the temperature so that the polishing machinery will operate precisely, the action of carborundum grinding compound on the glass surface creates heat by friction. Grinding and later polishing



E. A. Miller, superintendent of Lick observatory's new dome, shows how pitch is melted with butane before being combined with grinding compound used for grinding the mirror.

Honeycomb back of Lick observatory's 120-in. mirror. Ridges formed in casting provide strength while round holes will hold supports.

By Norman Bowman

L. P. gas maintains a constant temperature in the polishing and grinding room at Lick observatory, where work is progressing on the aluminized mirror destined for the world's second largest telescope. Constant temperature is vital for this work.

with jeweler's rouge can be maintained only for short periods because any alteration of temperature within the mass of glass can distort the surface upon which work is being done.

L. P. gas also performs another exacting task in the job of preparing the mirrors for service. It fires a 200-gal. Junior Model 100 hot water heater made by Mission Appliance Corp. of Los Angeles. The water provided carries the polishing compound, and must be precisely controlled as to temperature.

More than three years ago University of California regents purchased

LOOK BEFORE YOU BUY

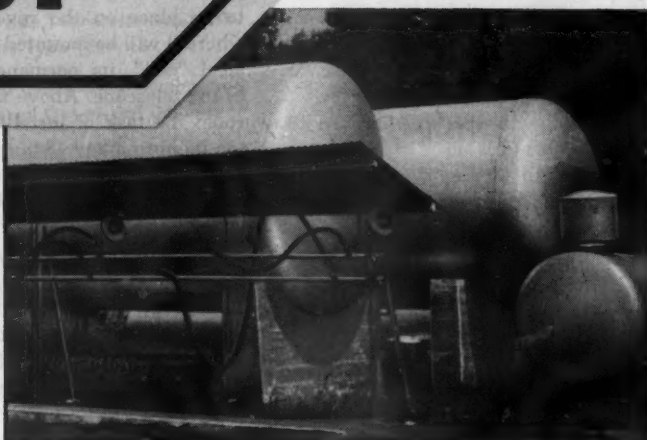


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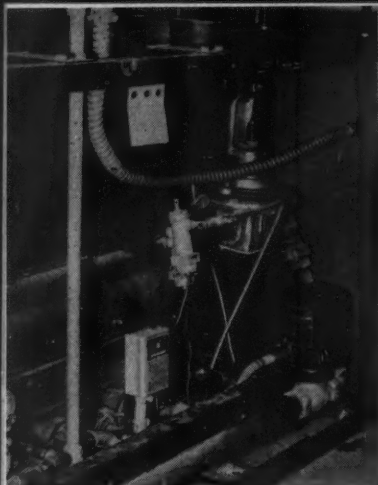
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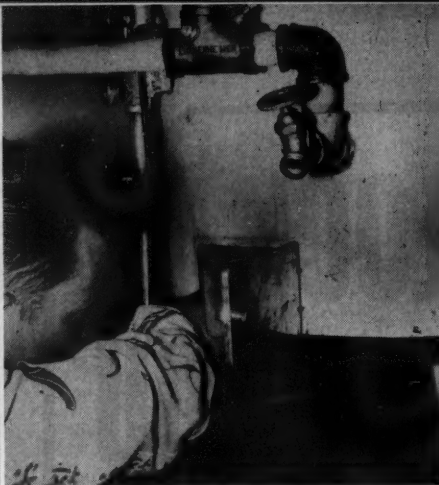
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Air conditioner and air furnace play a vital part in maintaining absolute control over heat within the grinding room.



Truck driver adjusts burner of 200-gal. hot water heater in new dome. Water carries grinding and polishing compound.

the then - unground 120-in. mirror blank for \$50,000 from Palomar observatory near San Diego. It had been cast in 1933 by Corning Glass Works, but Palomar's new 200-in. telescope made it surplus.

Since the mirror was shipped to Lick observatory early in 1951, more than 1000 lb of the original 8500 lb glass have been ground away from its surface. Across the mirror face a depression almost $1\frac{1}{2}$ in. deep at the center has been cut away. Now ready for final grinding and polishing, another 20 thousandths of an in. will be taken off to provide the most perfect surface man's skill can fashion. The final step will be application of an aluminum reflecting surface.

The reverse side of the big disc resembles a vast honeycomb with deep indentations forming ribs which will give the mirror strength and provide support for its weight. Because of this "honeycomb", temperature variation could cause polishing error.

Once the rough grinding is completed, the big mirror will be hoisted to its place on the revolving floor where it will be mounted in a welded steel "cell", its permanent housing in the telescope. Above the grinding room the task of installing the 140-ton mounting and 18-ton basic mechanism is going forward, with nearly two years of effort yet needed to complete the work.

The 120-in. telescope will be operated by an astronomer and his assistant. The \$638,000 building will contain the telescope, offices and daytime sleeping accommodations for three astronomers, lounge and kitchen, glassed-in visitors' gallery, photographic darkrooms, storage space for equipment, and research and testing rooms.

The building will also contain a special deep freeze for storing photographic plates that would "spoil" at normal room temperatures. Here, again, the L. P. gas air conditioning

system will play an important part in continuing operations which require close temperature control.

L. P. gas is no stranger to the more than 60 scientists, astronomers and personnel at Lick observatory. The only lines serving the campus are for telephone and electric lights. Residences and a large dormitory utilize L. P. gas for ranges, furnaces, and hot water heaters.

L. P. gas serves 10 stations, exclusive of the main observatory. These range in size from 25 to 250-gal. capacity, and usage averages about 30 gal. a month the year around. The main reservoir has a capacity of 2000 gal. All stations are serviced about once every three or four weeks to insure an adequate supply of LPG.

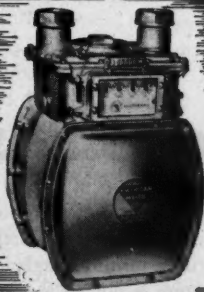
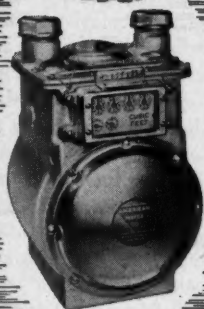
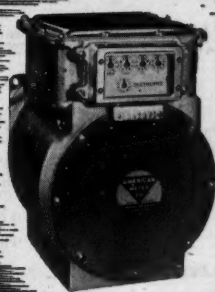
The purpose of this 120-in. telescope will be to carry forward programs of research and data gathering that are already under way with the more limited equipment in use at Lick observatory. The telescope is expected to provide, through use of special spectrographic attachments, valuable information concerning the atmosphere of stars in outer space. This further research should become possible in 1955.



Driver fills 2000-gal. storage tank with L. P. gas after driving 22 up-hill miles from San Jose to Lick observatory. Tanks are filled every three or four weeks.

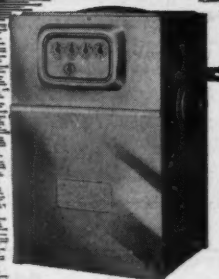


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2B-40 BRASSCASE	42	37	20 IN. W.C.	9 1/2
2B-50 ALUMINUMCASE	65	56	5 P.S.I.	13 1/2
3B IRONCASE	95	83	5 P.S.I.	35
5B IRONCASE	110	96	5 P.S.I.	40
5B ALUMINUMCASE	110	96	5 P.S.I.	19

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A. Businessman, doing business as BUFO SALE BALANCE SHEET June 30, 1964			
ASSETS			
Current Assets:			
Cash in Bank and on Hand		\$ 4,500	
Marketable Securities		2,000	
Accounts Receivable	\$10,000		
Less: Reserve for Bad Debts	800	9,200	
Merchandise Inventory		8,300	
Total Current Assets			\$24,000
Other Assets:			
Equipment	4,000		
Less: Reserve for Depreciation	2,000	2,000	
Truck	2,500		
Less: Reserve for Depreciation	500	2,000	
Prepaid Expenses		700	
Deposits and Securities Receivable		300	
Total Other Assets			6,000
TOTAL ASSETS			\$30,000
LIABILITIES AND NET WORTH			
Current Liabilities:			
Accounts Payable	\$ 7,500		
Taxes and Expenses Accrued	500		
Total Current Liabilities			\$ 8,000
Other Liabilities:			
Notes Payable—J. Brown (Due October 1, 1965)		3,000	
TOTAL LIABILITIES			\$11,000
Net Worth:			
Net Worth—January 1, 1961		17,800	
Add: Net Profit for the period January 1—June 30, 1964 (For Profit and Loss Statement attached)		6,000	
		23,800	
Less: Drawings for the period January 1—June 30, 1964		4,800	
Net Worth—June 30, 1964			19,000
TOTAL LIABILITIES AND NET WORTH			\$30,000

Balance Sheet

A. Businessman, doing business as BUFO SALE PROFIT AND LOSS STATEMENT January 1—June 30, 1964			
Gross Sales:			
Gross Sales		\$37,000	
Less: Sales Returns and Allowances		3,000	
Net Sales			\$34,000
Cost of Sales:			
Merchandise Inventory—January 1, 1964		7,000	
Purchases		28,300	
Total Cost of Merchandise Available for Sale		35,300	
Less: Merchandise Inventory—June 30, 1964		8,300	
Cost of Sales			\$27,000
Gross Profit			\$7,000
Selling and Delivery Expenses:			
Sales salaries	\$3,000		
Advertising	700		
Sales promotion	800		
Truck upkeep	300		
Depreciation—Truck	200		
Provision for bad debts	200		
		5,000	
General and Administrative Expenses:			
Utilities	300		
Depreciation—Equipment	300		
Taxes and licenses	250		
Insurance	200		
Accounting and legal	100		
Miscellaneous	50		
		1,200	
Total Operating Expenses			\$6,200
Operating Profit			\$800
Add: Dividend and Interest Income		200	
NET PROFIT FOR THE PERIOD			\$1,000

Profit and Loss Statement

By Irving Elbaum
Certified Public Accountant

Your Financial X-Ray and Case History

FROM time to time every business manager must step back and survey the results of his commercial efforts. This is *sine qua non* in "normal" times; when the business train is on the downgrade (as it happens to be at this writing) it is fatal to ignore the financial picture. In addition to the management other agencies (banks, Dun & Bradstreet, trade associations and, of course, the various taxing authorities) demand to know how well, or poorly, the enterprise has fared since the last reckoning.

The two basic financial statements are known as the balance sheet and the profit and loss statement.

The balance sheet presents the financial condition of the business at one point of time, usually as of the close of business on the last day of a calendar month. Exceptions obtain,

This is Part 3 in a series of articles about efficiency in business.

naturally, depending on the circumstances. In the event of death of the owner, when a business is sold, etc., the balance sheet is drawn up as of the most expeditious date.

The balance sheet is to the businessman what the X-ray is to the doctor. It shows the financial condition as of one moment. It does not indicate how the business unit under consideration got to that condition. It does not indicate whether the company is currently making or losing money. Those jobs are left for the profit and loss statement.

What does it show? It shows all the items the business owns (known as assets), all the items the business owes (known as liabilities), the dif-

ference between both totals representing the net worth of the business unit. Interestingly enough, every item is not an economic fact just because it is displayed on the statement, even though the layman feels that it must be. Many items are—cash, prepaid expenses, securities receivable, to take a few instances.

Some items, on the other hand, represent a combination of fact and judgment. Take, for instance, the case of monies due from customers on open account, technically known as accounts receivable. Granted that it is a fact that \$5000 (let us say) is due from our customers as of one moment of time, the statement usually shows as a deduction from that item a related item known as reserve for bad debts, which item attempts to predict how much of our \$5000 will



go "sour" by the time it is collectible. Good accounting judgment and much experience on the part of the company will aid tremendously in narrowing the gap between actual and predicted bad debts but the cold truth is that there is always a gap!

Other asset values that represent a combination of fact and judgment are inventories (there are quite a few methods of valuing them) and fixed assets (equipment, delivery assets, furniture, etc.). Fixed assets are usually reflected at a cost figure, which is reduced by a reserve for depreciation. The computations that result in that latter figure are based on at least three variables and, as a result, it is by no means uncommon to find that five accountants may arrive at five differing amounts for the depreciation reserve figure.

Assets are usually broken into at least two main categories—current assets are those assets that are liquid enough to be converted into liquid form within one year from the date of the statement in the normal course of business. That last phrase is a vital one, since some items could be quickly converted into cash within one year and yet are not considered current assets. An automobile is a good example, since it could be sold within a few days if it were mandatory, but in the normal course of business operations it is not changed into cash for a few years; hence, automobiles are not shown as current assets. Assets other than current ones are usually classed as other or fixed to indicate their non-current position.

Liabilities are also categorized as being current (those items that are payable within one year from the

ASSETS		
<u>Current Assets:</u>		
Cash in Bank and on Hand		\$ 4,500
Marketable Securities		2,000
Accounts Receivable	\$10,000	
Less: Reserve for Bad Debts	800	9,200
Merchandise Inventory		5,300
Total Current Assets		\$21,000

LIABILITIES AND NET WORTH		
<u>Current Liabilities:</u>		
Accounts Payable	\$ 7,500	
Taxes and Expenses Accrued	500	
Total Current Liabilities		\$ 8,000
<u>Other Liabilities:</u>		
Note Payable—J. Brown (Due October 1, 1955)		3,000

Balance sheet yields the current ratio if the current assets are divided by the current liabilities. In this case there are \$3 of current assets to pay off each dollar of liabilities.

date of the balance sheet) or fixed. In certain instances—mortgages, for example—the current portion is shown under the current category, the balance of the item being reflected under the fixed, or other, liabilities section.

Where the listing of the detailed assets would make the balance sheet unwieldy the technique of supporting schedules is adopted. If the firm banks at three different locations it might be advisable to list the grand total of cash on deposit as one figure on the financial statement, the details of which would be scheduled on an attached sheet.

Another item which it is expeditious to handle the same way is accounts receivable. The grand total can be shown on the statement and the details as to how much is not due, how much is 30 days past due, etc., may be scheduled.

If the balance sheet is the X-ray, the profit and loss statement (P & L) is the case history of our business. It covers a period of time. It shows what has happened between the financial condition of balance sheet 1 and that of balance sheet 2. Balance sheet 1 showed the assets, liabilities

and net worth as of Dec. 31, 1953. Balance sheet 2 shows the value of those same categories as of June 30, 1954. The intervening time is accounted for by the P & L, which covers the period Jan. 1 to June 30, 1954.

The general features of a P & L follow: From gross sales are deducted sales returns and allowances to arrive at net sales, from which the cost of sales (sometimes known as cost of goods sold) is deducted to arrive at the gross profit, from which the operating expenses (usually analyzed between selling, general and administrative, financial) are deducted to arrive at operating profit, to which non-operating income is added and from which non-operating expense is deducted to arrive at the net profit for the period under consideration.

Under our balance sheet discussion it was noted that the valuation of some items represents a combination of fact and judgment; by the same token, certain P & L items fall in the same category—provision for bad debts, depreciation, amortization, to mention some. Where the listing of the detailed expense accounts would make the P & L unwieldy the technique of supporting schedules is used.

Assuming we have before us a P & L for the year just ended and a balance sheet as at Dec. 31, what can we learn? Patently the figures by themselves can certainly help us to run the business more efficiently, since we no longer have to guess what the value of our inventory, let us say, is. We no longer have the

<u>Cost of Sales:</u>	
Merchandise Inventory—January 1, 1954	7,000
Purchases	25,300
Total Cost of Merchandise Available for Sale	32,300
Less: Merchandise Inventory—June 30, 1954	8,300
Cost of Sales	24,000

To estimate merchandise turnover from the profit and loss statement, cost of sales is divided by the average of the opening and closing merchandise inventories.

worry as to the amount of our net profit or as to the amount of income taxes, etc. Consequently, decisions can be made—decisions as to how much we can safely increase our inventory, how much we can lower our prices to meet competition before we reach the break-down point, etc.

It should be noted at this point that each of the financial statements has its value. Some people are prone to concentrate on the P & L almost to the exclusion of the balance sheet. This is tantamount to knowing half

the story. Both financial pictures must be, and should be, developed before important conclusions are reached.

Once we have explained the financial story as outlined above, do we call it a day? By no means. After the figures are seen—or better yet, scrutinized—from the absolute viewpoint, it is very, very wise to examine them relatively. We can see things in different lights. A net profit of \$15,000 (the absolute viewpoint) might seem quite good, yet when it

is noted that it represents only 1.5% of the net sales for the period under consideration (the relative viewpoint) the management might not feel as financially secure as it had the moment before that important ratio was computed.

Ratios, then, give us a new outlook, a new approach. We can see that the relationships between the amounts on the financial statements are perhaps more important than the amounts as such. Moreover, not only do the ratios that we compute from the current statements help us today, but, when compared with past and future ratios, they give us invaluable financial data. They are much easier to work with than large dollar amounts. (Who can dispute that it is more expedient to say 50% than \$14,000 out of a total of \$28,000?) We can also compare our financial results with those of other companies in our industry by merely checking percentages (or ratios) rather than by comparing dollar figures.

A word of caution before we take up some typical ratios: up to a point ratios can be very advantageous, but when used to excess they can be rather confusing, unless handled by an expert. To prepare 30 ratios each time you receive your financial statements rather than, perhaps, seven or eight, might be a case of seeing individual trees rather than the forest as a whole. It is the overall picture we are striving to see, not tangential financial data.

Typical Balance Sheet Ratios

Current ratio. Proportion of current assets to current liabilities. It is arrived at by dividing the former by the latter. It is the most popular balance sheet ratio, indicating how many dollars of current assets there are to pay off each dollar of current liabilities. Rule of thumb says that a ratio of at least 2 is best.

This means that in the event business takes a downturn, with the resultant drop in inventory values and poor receivable collections, there will in all probability be enough of an economic cushion to pay all current liabilities. To be specific: if the current ratio is 2.5 (arrived at by dividing \$25,000 by \$10,000) and business takes a downturn, this particular business could absorb a shrinkage of \$15,000 in its current assets and yet

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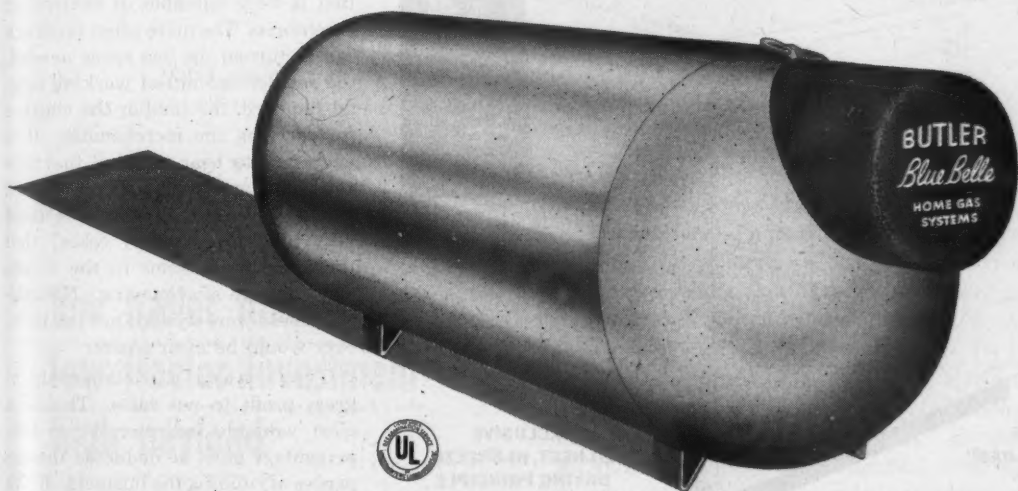
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pay off each creditor 100 cents on the dollar. This ratio is sometimes known as the working capital ratio, working capital being the excess of current assets over current liabilities.

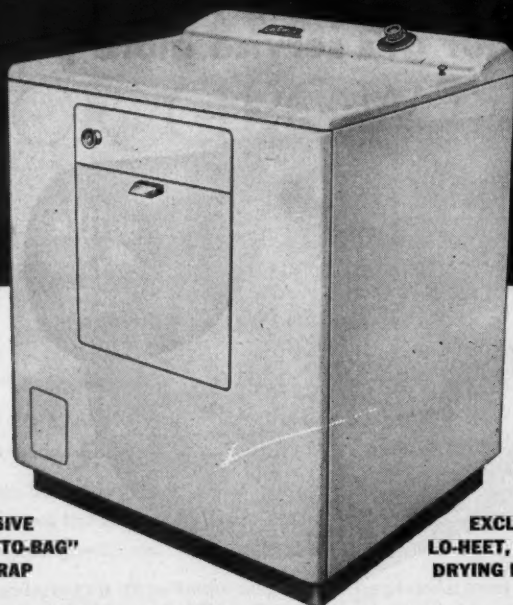
Acid test ratio. Proportion between the "quick" assets (cash, good receivables and marketable securities) and the current liabilities. As the name implies, it is a more stringent ratio, indicating the extreme liquidity of the business enterprise. A business is considered to be quite safe from economic ravages if the ratio is at least

1. However, as with most things in life, extremes are to be avoided, for even though a high acid test ratio would certainly indicate the ability of the firm to meet its obligations as they mature, it is a wise management that asks itself at this point whether it might not be advisable to put some of the liquid funds to a more productive use—to purchase additional merchandise, a building, to do some additional advertising.

Liabilities to net worth. Ratio of all liabilities to total net worth. It

shows how much of an interest statistically your creditors have in your business. Incidentally, the term "creditors" is not limited to trade accounts payable, but includes, although it is not necessarily limited to, notes payable to the trade, to banks, to equipment firms, taxes, wages and other expense accruals. After this ratio is computed for different balance sheet dates, it will show whether there is a greater or lesser tendency for the creditors to supply the business assets. All other things being equal (which, of course, they rarely are) it is advisable for this ratio to decrease as time passes.

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Typical P & L Ratios

Merchandise turnover. Cost of sales is divided by the average of the opening and closing merchandise inventories. The result indicates how many times during the period the inventory has "turned." This proportion is very valuable in controlling inventories. The more often the stock can be turned the less space needed, the smaller amount of working capital required, the smaller the charges for carrying the merchandise. It is necessary to bear in mind that this ratio indicates the turnover as a whole. Therefore, it is possible (and very probable in many cases) that there are some items in the inventory that are slow-moving. Naturally, if these were weeded out the turnover would be even greater.

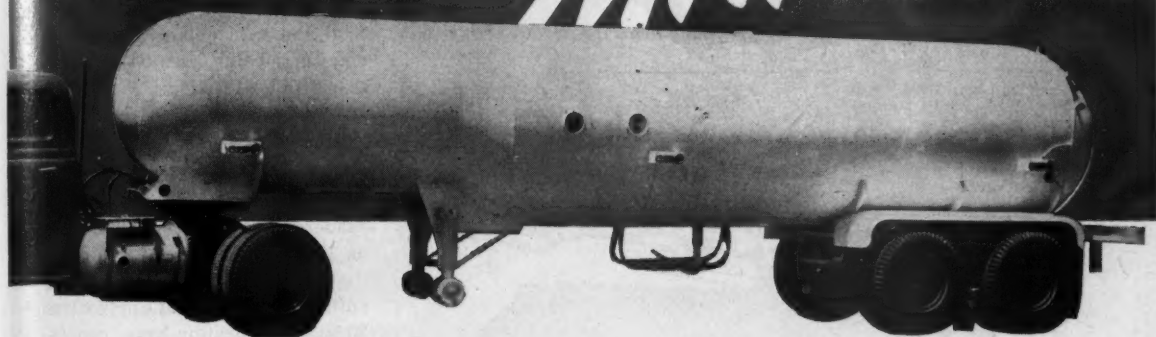
Gross margin. Relationship of gross profit to net sales. This is a most valuable indicator. From this percentage must be deducted the expenses of running the business. If the former (gross profit) exceeds the latter (operating expenses), a profit results.

Net profit to net sales. A vital ratio which shows how much is left for the management out of every net sales dollar. Efficient operation will naturally result in a higher ratio. This ratio is usually tied in with the previous one inasmuch as the difference between gross margin and net profit represents expenses. Thus, if the gross margin were 25%, the net profit to net sales ratio were 8%, by subtraction the difference of 17% would indicate that 17 cents out of every net sales dollar were being consumed by expenses.

Net sales to receivables. The ratio

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of net sales to the unpaid accounts and notes receivable as of the balance sheet date. Where a firm does a cash as well as a credit business it is best to compute this ratio by using the net charge sales as the numerator of the fraction, the denominator still being the unpaid receivables. If this is done the resultant figure will indicate how many days' sales are unpaid as at the balance sheet date.

For example, if the net charge sales for the year were \$50,000 and the un-

paid receivables as at Dec. 31 were \$10,000, the resulting ratio of 5 shows that one-fifth of the yearly sales is still outstanding. This one-fifth can be translated into 60 days' sales volume, on the assumption that there are roughly 300 business days in the year.

Net profit to net worth. This is one of the more important ratios. It shows the percentage the management is making on the amount invested.

In many firms the practice has been

adopted of presenting the financial statements in as palatable a form as possible. Many people dislike reading financial reports unless the main points are placed on a silver platter. Consequently, in recent years more and more firms are turning to such practices as presenting the financial data in story form, or in chart technique (this is used quite often by the federal government by showing a pie sliced), or by omitting cents completely, each figure being rounded off to the nearest dollar, any excess or deficiency being dumped into general expenses.

Use Rounded Figures

This latter technique is very effective and most easy on the eyes of the readers. If \$89,038.58 can be shown as \$89,038 no accuracy is lost and 2 digits out of 7 have been saved, resulting in a saving of approximately 30% in preparation time, proofreading time, and reading time.

Another method that is used to make financial statements more appetizing is to present them in condensed form. For example, the balance sheet might just show the total of the current asset group, the total of the other asset group, the total of the current liabilities, the total of the fixed liabilities and the net worth. By the same token the P & L might show net sales, cost of sales, gross margin, selling expenses, general and administrative expenses, operating profit, other income, other expense, net profit—each of the items referred to being shown as one figure. It is a good thought to present the details behind each summary figure in a separate schedule attached to the main financial statement so that those who would like may scrutinize the detailed data.

Much valuable data can be gleaned from studying the financial statements of a firm. Here, as in most other fields of endeavor, ingenuity pays off handsomely in that you can learn much more from your figures if you realize that the technique of financial statement presentation is a highly flexible one.

Another thought—turn your next P & L upside down by starting with the net profit, adding the expenses to obtain the gross margin, etc. In short, reverse the normal procedure. You'll get a new slant on your P & L.

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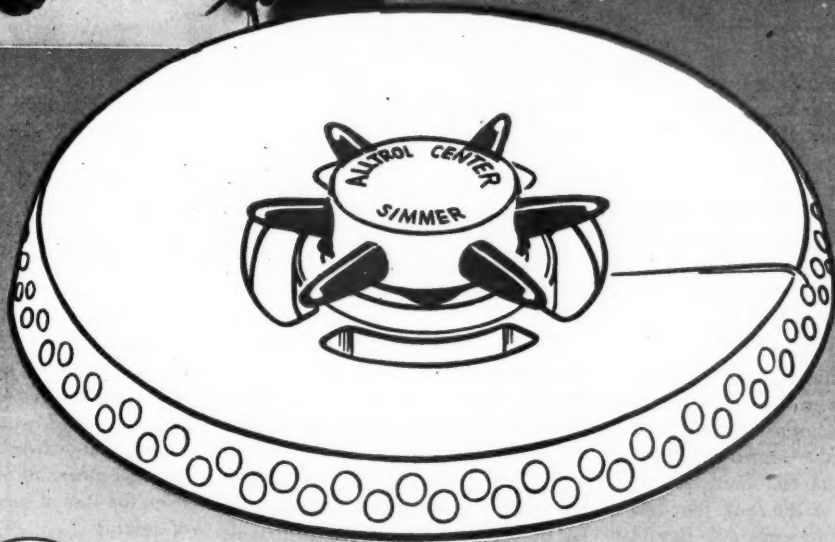
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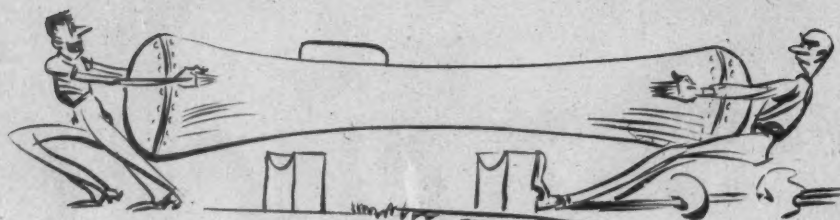
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Facts You Should Know

About Credit and Collection

By Lera Jeanne Rowlette
Member, House of
Representatives
Arkansas

"Let's define a conditional sale. Briefly stated, it is a transaction in which a seller transfers the possession of goods to a buyer on credit, with the understanding that title to the goods shall not pass from the seller to the buyer until the latter has paid the full purchase price."

AN L. P. gas dealer, in order to survive, must intelligently deal with the economic problems that face him. These include the problems of credit and collection. Credit is a major part of our business dealings today. It has meant a greater volume of business for the sellers and greater satisfaction of human wants for the customers.

The law has slowly but surely struggled to keep pace with the growing problems inherent in credit and collection dealings. Of course, credit dealings are based on the premise that all men are fundamentally honest. When you extend credit the first thing you are concerned with is the character of the individual with whom you are dealing, with his credit rating and his reputation for paying his bills.

When you extend credit, a customer can default in his payments to you. L. P. gas tanks are usually sold on conditional sales contract. You, of course, have a material man's lien on the installation of the tank that can be foreclosed if the customer should default and your suit is filed within 90 days. There are many technical aspects involved in this situation and these can best be worked out by consulting your lawyer in a case of this type.

Here, however, are some general hints about your conditional sales

contracts. A note should always be taken as evidence of the debt created and it should expressly recite that it is secured by a conditional sales contract. Some courts have held that where there is no note there is no debt and some retailers fall into the loose practice of just taking the conditional sales contract without the note. Always require both. The conditional sales contract has the virtue that it does not have to be recorded to give notice. It is valid even against an innocent purchaser. Of course, the customer who sells property that he has purchased on a conditional sales contract has committed a felony—but this may not help you get your money.

It is always advisable to have both the husband and wife sign as that eliminates a lot of technical problems. No contract should be signed on Sunday as it is absolutely void.

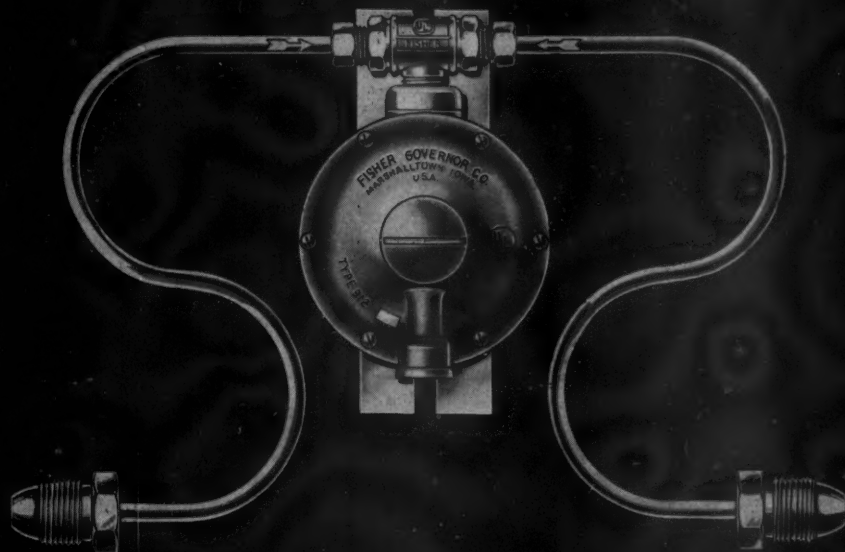
If there is any attempt to increase the amount of the obligation it should be by an increase in the principal price, and should not be computed as interest in any way. The seller has a right to fix his own price, so long as he complies with the fair practice law, which fixes minimums and not maximums.

Another good rule to observe in closing any sale is to do so under the

guidance of your lawyer. For a nominal fee your own lawyer can work out your forms and methods in such a way as to obtain the maximum security. The fee would be only a fraction of the loss that might result from acting without the benefit of counsel.

In your conditional sales contract you should include a clause expressly reciting that the tank and fixtures shall not become a part of the realty by reason of being attached to the soil, but shall remain personal property until paid for in full. You know, we have a rule of law that provides that anything permanently annexed to the soil becomes a part of it and of course you want to obtain the maximum security against default and technical defenses. The dealer can, of course, install certain types of tanks above the surface and thus avoid the fixture rule. I would recommend a sound well-drawn contract as one of the best means of protecting yourself from the loss of security in the event of default.

The landlords long ago worked out a chattel mortgage which provides that the lien thereby created will also cover any further advances and that the lien will cover any increase in livestock or crops. I see no reason why your sales contract should not contain a clause that the lien created



AN ECONOMICAL TWO-CYLINDER CHECK VALVE MANIFOLD ASSEMBLY

FISHER®

Type 912Y-1850A



This compact combination of the famous Fisher Type 912Y "Little Joe" and the Fisher Type P-411 Check Valve Cross Tee is ideal for many domestic applications. It offers superior regulation and control for gas loads up to 50 cu. ft. per hour. Permits the exchange of a full cylinder for an empty without interruption of gas service to the customer. Furnished with the mounting bracket for standard installations.

11 in. water column reduced pressure setting for loads up to 125,000 BTU/HR.

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LEADS THE INDUSTRY IN RESEARCH FOR BETTER GAS PRESSURE CONTROL

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Since 1880

would cover and extend to butane sold in the future and to the tank in which it might be placed and you would thus have a continuing lien.

You might have this clause phrased substantially as follows: "It is expressly understood and agreed that the mortgaged lien hereby created shall continue and shall extend to any future butane sold, placed or stored in said tank, and that any future indebtedness created at any time by the sale of butane shall be secured by a lien upon the tank in which the same is placed.

You should go further and provide: "That in foreclosing any lien the lien holder, or his assign, or any officer acting under any court order shall have the power and authority to take and remove said tank from the earth and shall have the right to do any and all things necessary for or incident to the exercise or enjoyment of this right."

But assuming that you have a standard conditional sales contract, what are your rights? First, let's define a conditional sale. Briefly stated, it is a transaction in which a seller trans-

fers the possession of goods to a buyer on credit, with the understanding that title to the goods shall not pass from the seller to the buyer until the latter has paid the full purchase price. When the buyer defaults, a battery of remedies is available to the seller. He has a security title to the goods which will support an action of replevin against the buyer. The buyer's promise to pay will found an action to recover the unpaid balance of the purchase price and the contract will usually make provisions for retaking the goods without legal process.

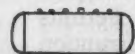
As the seller's action to recover the price and to regain the possession of the goods are held to be inconsistent, they are alternative remedies. The seller must elect which remedy to pursue. He may not, however, have both remedies, and, where he elects to retake the property, an action to recover on the debt is barred. Which remedy you would choose would,



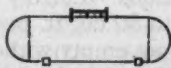
FLINT FARM TANKS

**FOR
ANHYDROUS
AMMONIA**

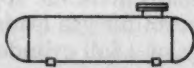
FLINT Anhydrous Ammonia TANKS are built in strict accordance with ASME code requirements for 200/250# working pressures, also meet all state requirements. FLINT TANKS are streamlined in construction, light weight, easy to handle and easy to install.



APPLICATOR TANKS
100 gallons



FARM SERVICE TANKS
500 and 1000 gallons



**TRAILER TRANSPORT
Bulk Storage Tank**
30,000 gallons

SEE THEM AT YOUR BONDED DEALER

FLINT STEEL CORPORATION

MEMPHIS, TENNESSEE

P. O. Box 3155

Phone 9-3558



Dealers should notify each other about those who don't pay their debts.

again, depend on the facts in each case.

But, what about the gas you sell on open account which the customer uses but never pays for? While I sympathize with the honest debtor who has had financial reverses, and will regain his position in the community by his sincere efforts to pay his debts, I have no time to waste on the deadbeat who purchases but never pays. He is the dishonest debtor.

At one time it was the law of this state that mortgaged personal property was not subject to execution or sale to satisfy an unpaid debt. To illustrate let's suppose that John Doe owned \$50,000 worth of personal property and mortgaged that property to Tom Smith for \$100. Thereafter he becomes indebted to Tom, Dick and Harry for various amounts ranging from \$100 to \$10,000. Even though the defaulting John Doe was a wealthy man his \$100 mortgage made his personal property exempt from

is something
ALWAYS
missing?

(to cut your profit)



...then switch to the one line that meets every selling need

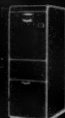
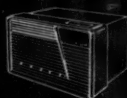
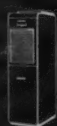
***EXAMPLE No. 5:** Local distributor warehousing and service are other advantages you enjoy when you handle the Bryant line. Your Bryant Distributor is equipped to help you on sales calls . . . to offer technical assistance . . . to co-operate in local promotion . . . to promptly supply the equipment or parts you may need for any job. He is as near as your telephone. And his services are backed by competent factory district representatives, factory product specialists and traveling factory sales-training and service teams.

It will pay you to call your nearby Bryant Distributor today.

Bryant Heater Div., Affiliated Gas Equipment, Inc., 17825 St. Clair Ave., Cleveland 10, Ohio

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WATER HEATING

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2. Quality products—Competitively priced
3. Established name—Good customer acceptance
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- * 5. Local Distributor warehousing and service
6. Factory district representatives and traveling sales training and service teams



seizure by the sheriff. He could enjoy wealth and ignore his creditors. Of course, this is an extreme example but it is just what happens on a smaller scale in a great many cases. Perhaps it has happened to you.

As a member of the House of Representatives I introduced Act 205 in the 1953 session. It was passed by the house and the senate and signed by the governor, thus becoming law. The act provides that a debtor's interest or equity in encumbered property, whether real or personal, may be effectively reached by junior cred-

itors through legal process, in other words by attachment or execution. Of course, the person holding the first mortgage or claim against the property would be joined as a party to the suit and would be the first paid out of the proceeds of the sale, and the balance would be applied to the payment of the other creditors. In other words, John Doe can no longer snub his creditors by use of this technicality. The attorney general of the state has ruled that the act is constitutional. I hope that this bill will prove to be a help in protecting honest credit-

ors and in keeping debtors honest.

Now lets apply this act to you. Suppose you sell to a customer who has a substantial amount of personal property and he defaults or fails to pay. You then discover that all of his property is mortgaged. What can you do? This law permits you to name the mortgagee as a defendant, and you can go ahead and take your judgment; then the property is sold and the mortgage creditor gets paid, then your excess goes to the debtor.

And here is a suggestion for collection that may save you some suit money. In Texarkana the dealers have developed a practice of notifying each other about defaulters. I think this is a very wise idea. In the larger communities where there is more than one butane dealer you might guarantee faithful payment by the simple expedient of exchanging information about the defaulters and

4 new sales helps

to keep Reznor first in sales—first in dealer profits

More dealers make more money selling Reznor. Here's why. Reznor is the world's most widely advertised gas unit heater. And Reznor gives you the right tools to build sales from the acceptance created by Reznor national advertising. That's why Reznor stays at the top — first in sales year after year.

The four pieces shown above are powerful new sales aids which will help Reznor dealers to even better sales records this year. Bulletin F54-UH will tell your prospects the complete story on Reznor suspended models in six colorful pages, including full color illustrations of some typical Reznor installations.

"Applications of Unit Heating" (Bulletin SA-541) is a handy pocket-size manual which covers the advantages of gas unit heaters as compared with other systems, as well as a lot of valuable hints on how to plan a successful Reznor installation. You'll want to have a copy with you at all times. Distribution of this piece to builders and architects will give your sales a boost, too.

The new Reznor Sales Planner—your guide to local promotion—gives

you suggestions on how to get the most out of your advertising dollar through newspaper ads, direct mail, radio and TV. It includes sample sales letters and radio spots.

To help you plan your newspaper advertising, a new Mat Book shows 57 complete ads you can run as is plus a wide variety of illustrations of the various Reznor units for use in building your own ads.

If you aren't now a Reznor dealer, or if you don't yet have these new sales helps, you can't be getting your full share of the unit heater market. Don't miss any more sales. Your nearby Reznor distributor has all the facts. Get in touch with him today. Or drop us a line for his name and address. **Reznor Manufacturing Company, 4 Union St., Mercer, Pennsylvania.**

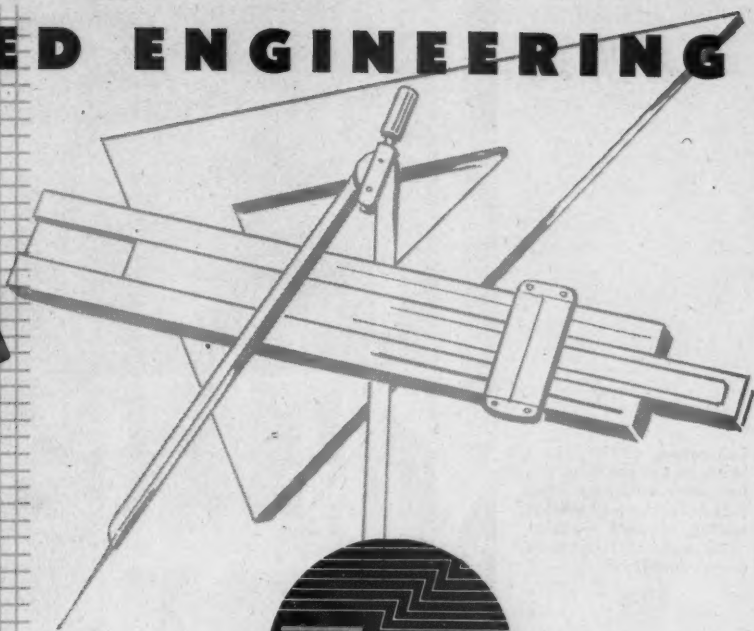


A man who sells property which he has purchased on a conditional sales contract has committed a felony.

by refusing to render service until the other dealers are paid. An empty butane tank does not cook much food or provide much heat. Such a measure should be applied with caution, and of course, if cash payment is tendered you must go ahead and serve the customer even though he is in default with another dealer, but you might continue to insist upon payment on the principle that cooperation and not competition is the life blood of good business.

Now, of course, in exchanging information, applying economic pressure, and in cooperating in collecting delinquent accounts caution should be used. The butane dealer performs a public service and cannot discriminate against customers who are ready and willing to tender cash payment. It is conceivable that a customer might bring a lawsuit for damages against a dealer who refused to render service. You must remember, however, that bankruptcy is the penalty for careless and poorly planned business operations.

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Outstanding performance of the entire SEL-PAC line is a direct result of advanced engineering. Behind SEL-PAC products are years of experience both in the field and in the laboratory. This is your assurance of satisfaction and dependability.

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Write, wire or telephone today for catalog and price list covering the SEL-PAC line of LP-Gas control equipment.



LP-GAS
REGULATORS
AND
FITTINGS

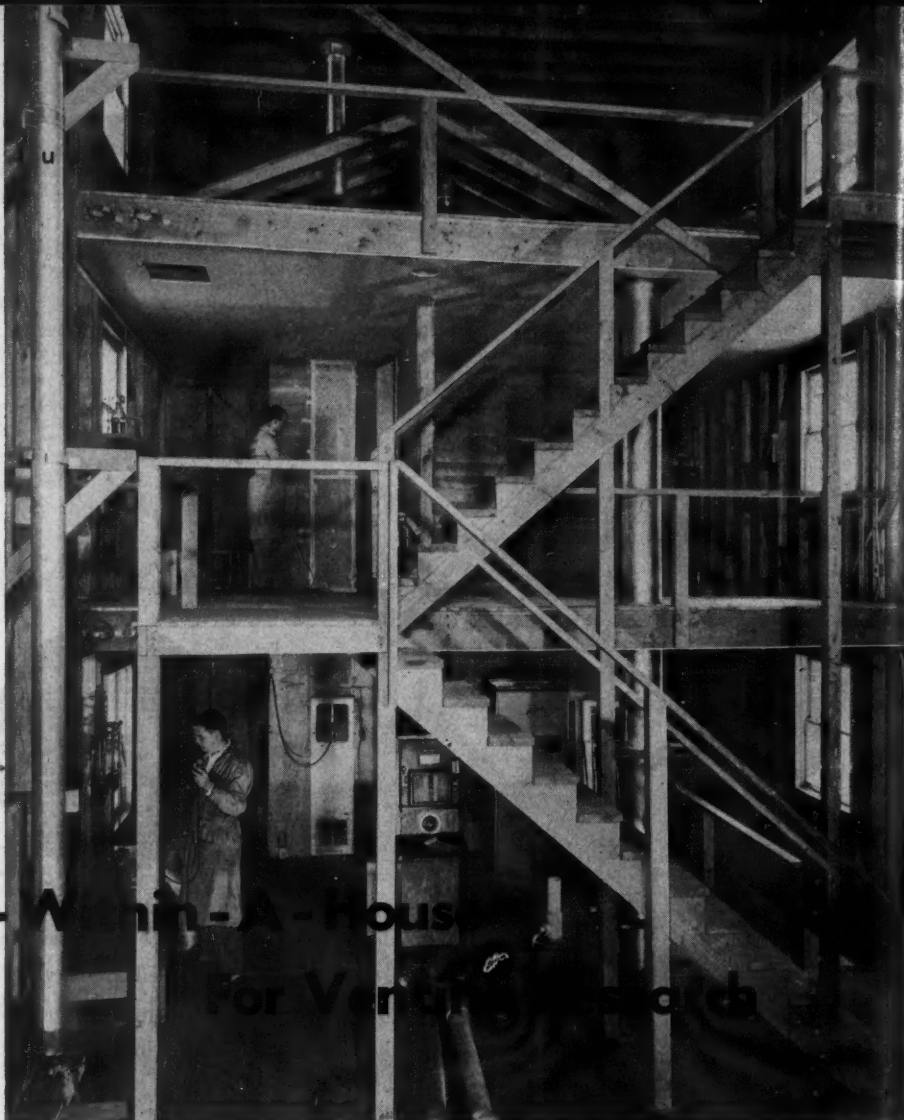
Selwyn-Pacific Company

340 WEST AVENUE 26, LOS ANGELES 31, CALIFORNIA



exc u

Laboratory at William Wallace Co. contains this two-story structure plus basement, permitting testing of vent installations under actual operating conditions.



A House - Within - A - House For Venting Research

MANY vital problems connected with the proper venting of gas appliances are receiving close scrutiny these days in a "house-within-a-house." Located at Belmont, Calif., this structure houses the research facilities of the William Wallace Co., manufacturer of Metalbestos gas vent pipe.

The "house-within-a-house" is a three-story structure, simulating typical house construction, together with a variety of scientific testing equipment. Here in this laboratory tests are conducted on numerous aspects of correct gas appliance venting, employing every type of vent piping now in common use.

The research activities now underway at the laboratory are a direct and natural outgrowth of the basic engineering studies on proper vent

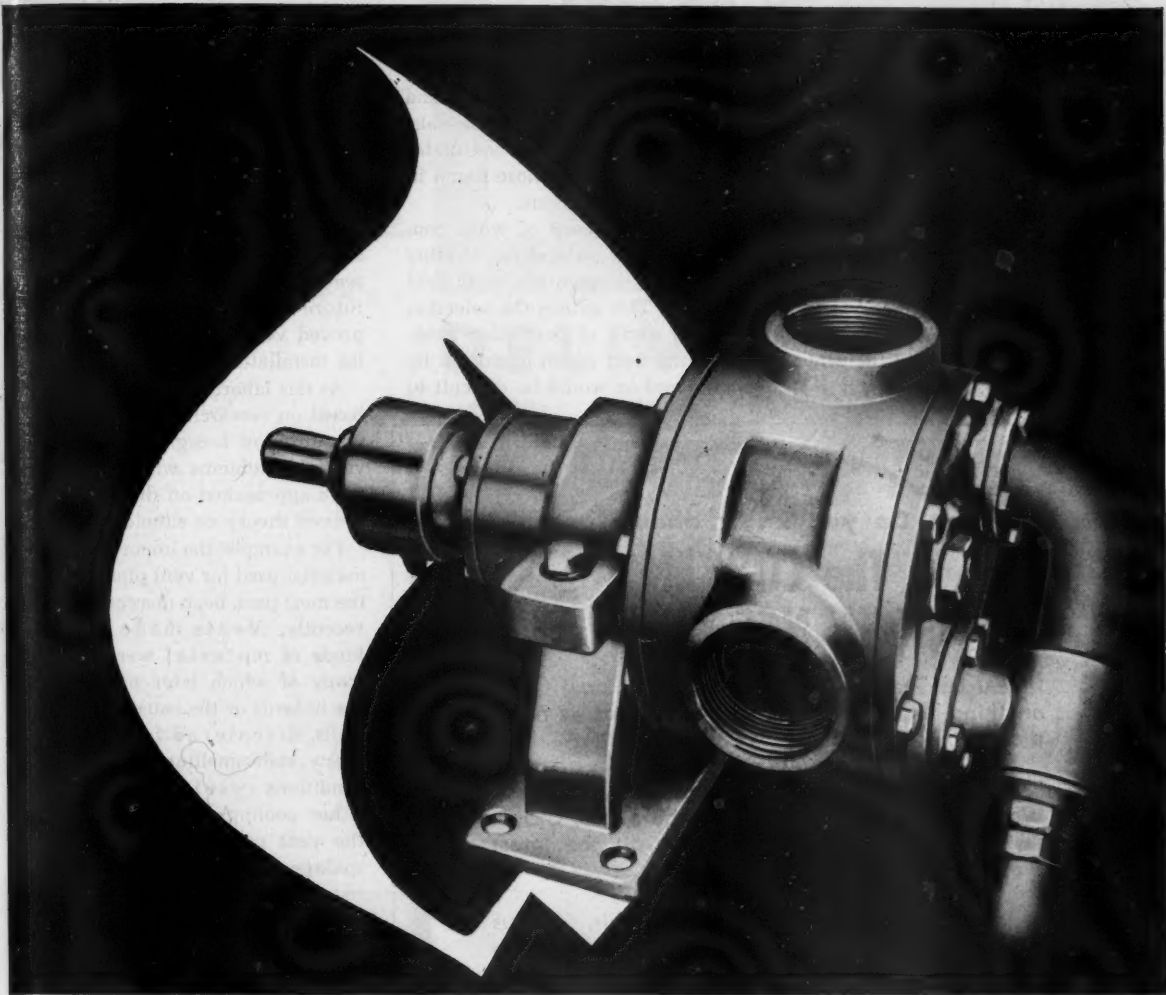
design some years ago by Alan Kinkead, president of William Wallace Co. In this work Mr. Kinkead determined that the most important factors involved in the flow of gases through a vent are the heat content of the flue gases, the amount of heat loss through vent walls, the area and height of the vent, and the resistance due to elbows, tees and other fittings required to make up the vent system. The effect of these various factors on proper vent operation was determined and their relationship expressed in the following equation:

$$B = cA \frac{\sqrt{H}(T_a - k) + b}{\sqrt{R}}$$

where B = the heat content of the flue gases in Btu; A = the area of the vent in sq in.; H = the height

of the vent in ft; R = the resistance of the vent in velocity heads; T_a = the average temperature of the vent gases in the vertical portion of the vent in degrees F; b = the heat loss through the walls of the vent up to the midpoint of the vertical vent in Btu; and c and k are constants related to the ambient temperature and altitude.

This equation, known as Kinkead's equation, is now generally recognized as the first scientific and accurate method by which correct vent capacity for any given installation can be determined. Extensive testing and experimentation were necessary, of course, to substantiate the validity of the equation and the earlier research from which it was derived. This work was accomplished with the assistance of the Stanford



What Do You Want in an LP-Gas Pump...

easier installation . . . better bearings . . . real anti-leak protection? You get all three . . . and lots more in the new line of high quality Fairbanks-Morse LP-Gas Pumps. They're engineered to eliminate all the common causes for complaint.

Take installation for instance . . . the new type mounting bracket permits the entire pump body to rotate when just two bolts are loosened; it's simple to align the pump with pipe connections . . . and there's enough lateral movement to make the power hook-up easy, too.

How about leaks? Not a chance . . . you get double protection . . . rotating mechanical seals which stop all leakage through the shaft end. The secondary, or safety

seal, does not operate, or wear unless the primary seal should fail.

Three heavy-duty thrust bearings in the backhead frame stabilize end play . . . a fourth bearing near the driving end gives additional radial load insurance.

Fairbanks-Morse LP-Gas Pumps are made in models for stationary installations, truck mounting, tank car unloading and bottle filling. Capacities to 55 gpm. For full information, fill out the coupon below and mail it to Fairbanks, Morse & Co.

Fairbanks, Morse & Co.
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Please send literature on the Figure 5147-11 LP-Gas Pump.

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Address

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Research Institute. As the work progressed it was realized that the variety of problems involved in gas venting justified establishment of permanent facilities devoted exclusively to research in this field, and the William Wallace laboratory was established.

The various projects undertaken by the laboratory fall roughly into three general categories. First is work relating to the design and development of new products or the improvement of existing types of vent piping.

The second category of work is concerned with the testing of existing vents and current installation practices. Vents of every type and size, and made of various materials, are checked for performance under conditions simulating those found in actual home installations.

The third category of work concerns research on specific venting problems in cooperation with field personnel. This entails the selection for close study of particular problems in the field which might not be encountered or would be difficult to

simulate in the laboratory. An example of such work is an efficient multi-story venting system which was recently installed in a public housing project, and which provides for the venting of a number of individual appliances through a common vent. The unique problems encountered with this installation served to substantiate previous research findings as well as promising future important savings and improved venting techniques for similar installations.

At this laboratory answers, solidly based on research and experimentation, are now being found to various venting problems which heretofore were approached on the basis of unproved theory or simple guesswork.

For example, the importance of the material used for vent piping has, for the most part, been disregarded until recently. Vents made of various kinds of material were installed, many of which later proved to be fire hazards or the cause of damaged walls, discolored furnishings and musty, stale-smelling room air. These conditions resulted mainly from either cooling and condensation of the vent gases within the vent or spillage of the vent gases into the room. The vent was not operating properly; it did not remove all the products of combustion because the vent gases were not kept hot enough to be floated up to the outside air. The importance of an insulated vent in preventing heat loss through a vent pipe and thus keeping the vent gases hot was finally recognized as a key requirement for venting.

Another important subject for research was the effect of vent area and height on the vent's capacity. Local codes often specify the size of vent in accordance with the size of the vent collar on the appliance. While this is usually satisfactory for vents of average height, extensive study and testing of numerous installations has proven this is not necessarily a valid practice for vents which are extremely tall or unusually short.

These examples illustrate some of the many problems related to proper gas venting which are now receiving close study. As the solutions to these problems are found, the entire gas heating industry will benefit from the resulting increase in acceptance and use of gas appliances.

Do you know about The CORKEN EXCHANGE PLAN?

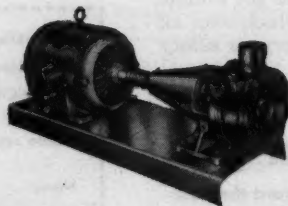
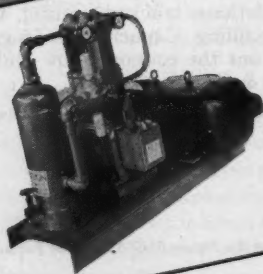
If you have a Corken Compressor or Pump that's anything less than the Corken Good Ones we make today, you can do this:

Send us the model and serial number of your pump. We will promptly ship an exchange pump, C.O.D. The exchange pump will embody all the latest features of current models.

Install the exchange pump, and keep it. Ship us your old, worn, damaged or obsolescent pump. We will repair it.

Then we will return your full deposit to you, less the cost of repairing your old pump. That, and the transportation charges are all you pay.

This amounts to a standby service in case of emergency, as well as a plan for keeping Corken pumps up-to-date.



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Big BUTLER
LPG truck tanks
can help you...

LOWER DELIVERY COSTS

by matching capacity to growing loads



Big Butler truck tanks give you delivery capacity to serve more customers with each trip. By reducing costly backtracking to reload, you drive fewer miles, especially when supplying large commercial installations and big home systems. You can soon see the difference on the speedometer and in your bank account!

Butler balanced design gives you great strength without useless dead weight. As a result, you can haul big loads over most unimproved roads. Butler free-flow, three-way piping—to, from, or between systems—saves minutes every time you unload. This helps you make more deliveries in a day.

Let Butler engineers show you how a Butler truck tank, matched to your individual roads and routes, can reduce your costs and boost your profits. Deluxe designs in 1200, 1600, 1800 and 2000 gallon capacities. Write for more facts, today!



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New Products and Trade Publications

To secure further information on products or new publications, fill out the coupon and mail, indicating by number the items desired.

1. Explosion-Proof Unions

A completely new, self-adjusting expansion type explosion-proof conduit union has been placed in production by Appleton Electric Co. The new union is safer and effectively reduces costs through greater ease of installation.

The expansion union is a self-contained unit consisting of two parts as compared with conventional three piece unions. It is permanently assembled at the factory, is never taken



apart, and requires only two tightening operations. Precision-built, it is explosion-proof under all conditions of expansion. The risk of explosion hazards due to failure to completely "draw up" conventional contact surfaces is eliminated in this new union.

Reduced external diameters permit easy installation in places where conventional unions are difficult to install, and a built-in phosphor-bronze spring insures positive grounding at all times. Only one of these unions is required on installations normally using two conventional unions, thus reducing equipment costs and saving most of the installation time.

Appleton Electric Co.

3. Hot Plate



A newly designed gas hot plate which has full range size cast iron burners is now available from Meynell Manufacturing Co. It has a large size black porcelain enameled top, white enameled sides and is of heavy gauge steel construction. Gas con-

nections are in rear at either right or left.

The hot plate pictured is Model 311, without white porcelain splash guard, but this is standard equipment on Model 511. Both models have full size drip pan, plated burner grates, and burners are easily removable for cleaning.

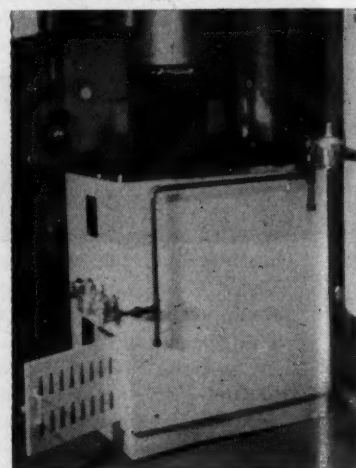
Specifications for Model 311 are 6½ in. high; 12½ x 20¼ in. cooking top size, and 20 lb in weight.

Meynell Manufacturing Co.

4. Incinerator

This incinerator is offered by Brulé and is the Model M-2 "Estate." The unit is a little larger than the usual home incinerator, having a 4½-bu. charging capacity and designed to meet the requirements of the larger family, those who wish to incinerate lawn debris, and others who want a larger-than-usual incinerator.

The Brulé M-2 Estate is a packaged unit, attractively white finished, black top and stainless trim. Lining throughout of high temperature insulating refractory in scored individually suspended tiles. The sides, rear and base are air cooled, the front insulated. Some 135 lb of cast iron are used in the heavy grate, drying



shelf, main burner and annular flue collar.

Gas equipment is the timer-controlled main burner with safety pilot (adjustable), safety shutoff, gun filter and pressure reducer.

Flue gases are automatically tempered by dilution with air passing through and air cooling the sides.

The Brulé M-2 Estate incinerator is 22 in. wide, 34 in. deep, 41 in. tall, shipping weight 520 lb. The Estate has been field tested for several months in commercial as well as residential applications.

Brulé Incinerator Corp.

2. Gas Range



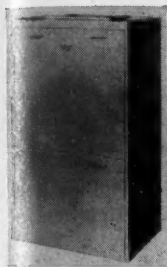
The Welbilt Stove Co. has introduced a full new line of 20-, 30-, and 36-in. gas ranges.

This new "Custom" line features a deluxe background with electric clock, minute minder, lamp outlet, and appliance receptacle. The feature range of the Custom line is Model No. 5478, a 36¼-in. gas range with a high broiler and full deluxe background. This model is also available with a glass oven window and oven lamp.

Model No. 5437 is the Custom model with deluxe background in a 30-in. model. Also available is the 20-in. model of this series, No. 5427.

Welbilt Stove Co.

5. Air Conditioning Units



Utility Appliance Corp. has introduced a new line of summer air conditioning units, featuring an exclusive "floating chassis" design.

Designed as companion units for the extensive

line of Utility forced air furnaces, these air conditioners, designated as 2-SAC and 3-SAC, may also be used with other makes of furnaces. Installation may be made either at the time of original construction, or added to existing heating systems, where ducts are suitable.

The units may also be operated as separate air conditioners, with no connections to a heating system. They are available in 2 and 3-ton capacities.

By isolating the refrigeration unit and blower completely from the cabinet by means of resilient rubber mounts, any noisy vibration caused by metal-to-metal mounting is eliminated. As a further advantage, blower and refrigeration units may be easily removed for servicing.

The Utility air conditioning units also include double thickness cabinet insulation, two large self-contained air filters, rust-proof condenser pan, and a dynamically balanced blower which operates at low speed to deliver maximum air against maximum static pressure.

They feature over-sized condensers which require no modification to operate with city water or cooling towers, hermetically sealed compressors combined with opportunity for field service, and complete flexibility of control connections for all types of heating-cooling installations.

Utility Appliance Corp.

6. Water Heater Control



A new concept in water heater control design has just been introduced by General Controls Co., with a streamlined, twin-dial model, designated the G-7, which offers

both modern appearance and new simplicity of operation.

This thermostatic control is a complete departure from the appearance

7. Cooking Units



Roper "arRANGEable" gas cooking units are a departure in cooking facilities for the modern home that will hold much interest for dealers who like new ideas to present to their customers.

Consisting of an oven-broiler unit and as many two-burner top cooking units as the housewife desires, the Roper "arRANGEable" is ideal for the new home or remodeled kitchen.

The oven-broiler unit is available

as fully-automatic, built to CP standards or with manual ignition. The top burner unit has "Insta-Flame" gas ignition.

The oven-broiler positions in the wall at any convenient level. The top burner units are placed in counter tops or islands.

The "arRANGEable" offers a new flexibility in kitchen planning. It permits the housewife to put her cooking exactly where she wants it. It also features the smart, built-in appearance, that's so in demand.

Among the features of the oven and broiler unit are the "Insta-Set" control panel; a "chime-n-time" electric clock; oven interior light, automatic oven heat control; "safety-stop" oven racks; thick insulation; door adjusters, and pilot filters.

There are two Alltrol "center-simmer" top burners; special burner controls; concealed porcelain enamel spillage traps, and pilot filters.

George D. Roper Corp.

For notices of more new products and trade publications turn to page 146 of the Power Section



READERS' SERVICE COUPON

Just fill in this coupon for Products information and copies of new publications, and mail to

BUTANE-PROPANE NEWS, 198 S. Alvarado St., Los Angeles 57, Calif.

8/54 Fill in numbers of items in which you are interested.

No. _____ No. _____ No. _____ No. _____
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NAME AND TITLE _____

FIRM'S NAME _____

ADDRESS _____

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of most heater controls. The mechanism is contained in a compact aluminum case which fits against the water heater with a minimum of protrusion, and all control functions are incorporated in the two satin chrome dials. There are no levers or buttons to manipulate in adjusting or re-lighting the heater.

The upper dial incorporates on-and-off controls, plus simplified reset and re-lighting of the pilot using the General Controls rotational reset feature which eliminates the conventional reset button.

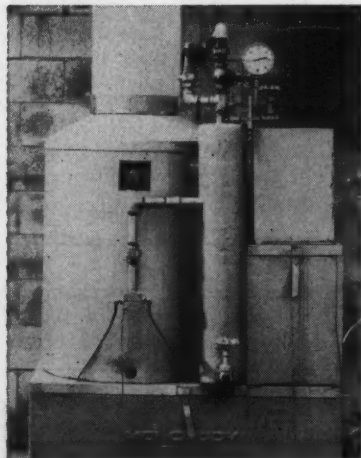
The lower dial provides for a complete range of temperature selection, with easy readability from a standing position.

Base of servicing is another feature of the G-7. The design has a minimum of parts, the control head can be removed quickly from the shank, and the unit provides quick access to the thermostatic valve.

The thermocouple-operated G-7 is adaptable to all types of gases and a variety of couplings and burners. Another available feature is a dual-safe model which permits the use of a high-temperature limit switch where required by local codes.

General Controls Co.

8. Steam Generator



The Malsbary Model 220SG is a fully automatic, butane-fired steam generator, producing 15 boiler hp of dry saturated steam hourly. This unit burns 220 cu ft, or 6.8 gal., of butane per hour at 14-in. water column pressure.

One user produces approximately 1850 cement blocks daily. Blocks are steam cured at night in a kiln with temperature controlled by an electric thermostat. An automatic timing clock starts the steam generator and turns it off at time set by operator.

Steam curing is easily 75% quicker

than air curing and has many advantages. For a further idea of how Malsbary steam generators build fuel loads send for condensed specifications.

Malsbary Manufacturing Co.

9. Tank Trailer



To meet the varying needs of LPG dealers, the H & H Equipment Co. has built a tank trailer that will answer a wide range of requirements. Called the "Brindle" tank trailer, it is made in two models, one for tanks up to 1000-gal. capacity, and the second for 1800-gal. tanks.

The main trailer frame and arch are formed of heavy 4-in. pipe, with all pipe joints reinforced with 3½-in. pipe inserts. The juncture of frame and arch is completely welded and reinforced with gussets and channel iron bracing. Heavy, load carrying bunks slide on frame, locking in place with pins at various positions. A two-drop lifting yoke arrangement operated by the winch makes it easy to raise and lower tanks.

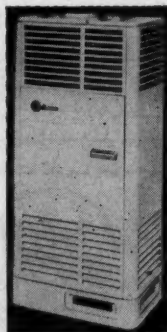
Trailer will set a conventional 41-in. truck on a base 30 in. high. Specifications are: Height 8 ft, 1 in.; width 7 ft, 10 in.; length 14 ft, 10 in.; inside clearance 4 ft, 9¾ in.; weight 1200 lb. *H & H Equipment Co.*

10. Trailer Heater

For those who enjoy the comfort and convenience of heating with L. P. gas, Duo-Therm Division of Motor Wheel Corp. now is producing a gas burning mobile home heater.

This newly introduced model has a wealth of automatic features, making it outstanding in the mobile home heating industry.

Duo-Therm's all-purpose mechanical thermostat gives any amount of heat wanted, automatically. No wiring or electricity is needed to activate this thermostat. It is built into every gas heater at no extra cost. The mobile home owner merely sets the thermostat to the desired temper-



ature and from there on the thermostat takes over.

Assuring heat from floor to ceiling and from front to back is Duo-Therm's power-air blower. A heat-sensitive switch turns the blower on and off automatically and maintains perfect heat circulation. The quiet motor uses no more current than a light bulb. The blower also can be manually operated for summer cooling.

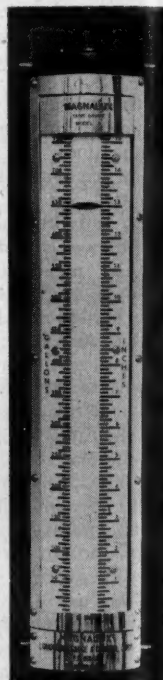
The Duo-Therm 551 has a 40,000 Btu input.

*Duo-Therm Division,
Motor Wheel Corp.*

11. Automatic Tank Gauge

The Liquid-vision Gauge & Control Corp. announces the development of an improved type of automatic reading gauge for use on propane and butane tanks.

One of the outstanding features of this gauge is that it can be used on existing tanks without the necessity of cutting holes or other openings in the tank itself. It is an externally connected instrument that is simple to install and can be quickly and easily placed on tanks.



Called "Magnalux," it consists of a non-magnetic column that is connected to the liquid and vapor space of the tank. Within this column a float is free to rise and fall. As the liquid in the tank changes in level, the liquid flows through a connecting tube to the column and levels out in the column itself. The float, which has a magnet connected to it, follows this change in level and the field from the magnet positions a roller on the outside of the non-magnetic column.

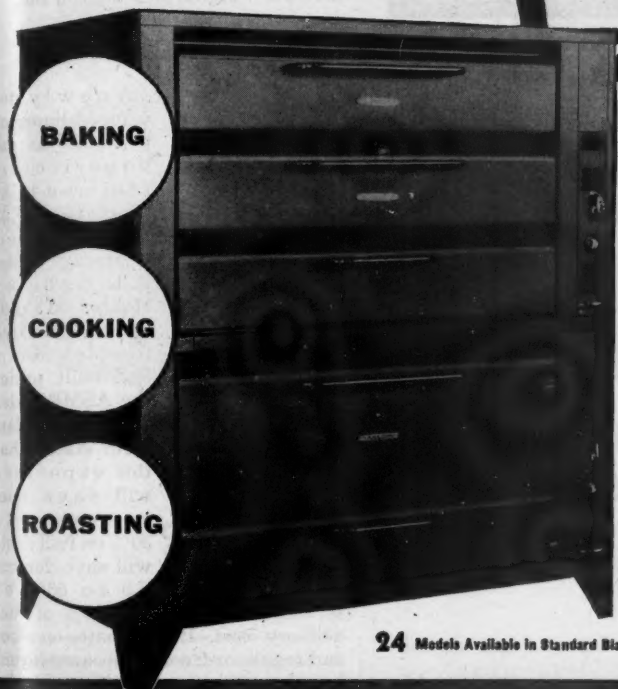
The roller is enclosed within a plastic raceway that is filled with an inert gas. On each side of the raceway are placed scales that can be graduated in feet and inches, gallons, or any other convenient unit of liquid measure. Thus, the operator can see at a glance the exact amount of L. P. gas stored within the tank.

Another advantage claimed for

YOUR *BEST BUY!*

BLODGETT

**AN OVEN BY
'OVEN SPECIALISTS'**



When you buy Blodgett, you benefit from the experience, research, engineering and know-how—developed from OVER 100 YEARS OF SPECIALIZATION IN BUILDING OVENS ONLY! For baking, roasting and general oven cookery, Blodgett's built-in features give you MORE for your OVEN DOLLAR! Blodgett's proven performance . . . proven economy . . . in hotels, restaurants and institutions all over the world make **BLODGETT** your **BEST OVEN BUY!** Ask your Dealer,

*"QUALITY OVENS
SINCE 1848"*

24 Models Available in Standard Black, Gleaming Stainless Steel, and Platinum Gray Finishes

FEATURE AFTER FEATURE DESIGNED FOR LONG LIFE!



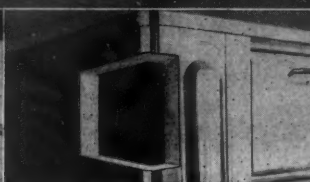
STREAMLINED

The oven is smart in appearance with flush, smooth surfaces that make for easier cleaning.



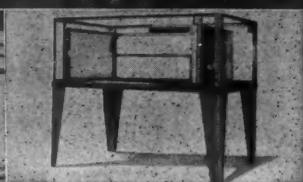
COUNTERBALANCED DOORS

More sturdily built . . . check them. They open and close with a flip of the fingers.



HEAVIER INSULATION

4 inches of Fiberglas insulation around the oven keeps the heat where it belongs.



SKYSCRAPER CONSTRUCTION

For extra durability. Body walls and structural steel frame welded into a single rigid unit.

THE G. S. **BLODGETT** CO. INC.
30 LAKESIDE AVE.

In Canada, Garland-Blodgett, Ltd., 1272 Castlefield Ave., Toronto 10, Ontario

BURLINGTON, VT.

this gauge is that there is no possibility of either liquid or vapor escaping from the tank as the tank seal is a solid metal wall of non-magnetic material. This wall can be made as thick as required for any pressure.

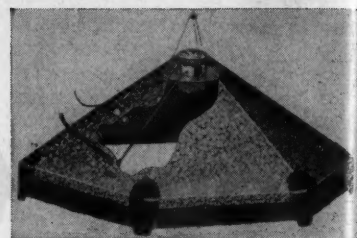
The Magnalux is entirely self-actuated and does not depend on any outside source of power for its operation. Neither is it necessary for the operator or attendant to manipulate valves or any other mechanism. By simply noting the position of the roller on the scale, he knows instantly the exact amount of propane on hand. *Liquidvision Gauge & Control Corp.*

12. Gas Brooder

A new type, low-cost, gas brooder is now in production by the Rhinehart Manufacturing Co. Inc.

Known as the "Infra-Radiant" gas brooder, it has a new type burner of imported steel which produces greatly enlarged radiation. No pilot light is required.

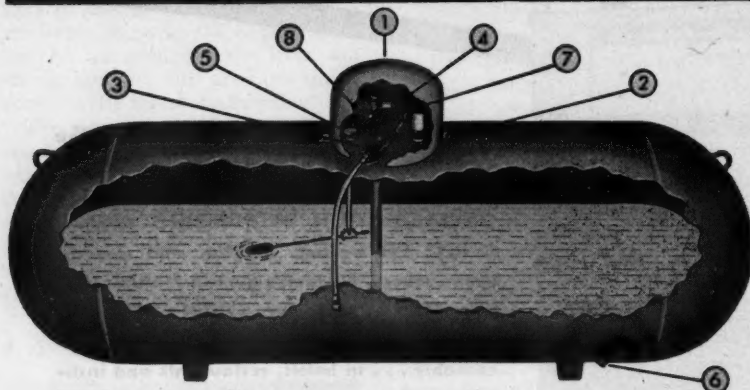
Actual field tests with brooder house temperature at 42° F proved operating costs of 1.2 cents per chick for 500-chick brood over a full 11-week period.



New design and construction combine the best features of infrared and gas brooding. No obstruction on the floor permits 100% full brooding area for 500-chick brood. A thermostat, sensitive to the slightest temperature change, insures efficient operation regardless of the weather.

Rhinehart Manufacturing Co. Inc.

Economy LP-GAS SYSTEMS



Some of the many Features and Qualities of *Economy* Systems

- ① ONE PIECE STREAMLINE DOME!
- ② STURDY DETACHABLE HINGE!
- ③ LARGE ORFICE REGULATOR!
- ④ LIQUID TAKE-OFF, BUILT-IN EXCESS FLOW!
- ⑤ FLOAT GAUGE, REPLACEABLE SNAP-ON DIAL!
- ⑥ BOTTOM PLUG FOR LIQUID, OR CLEAN OUT!
- ⑦ LIQUID LEVEL OUTAGE GAUGE!
- ⑧ PRESSURE GAUGE OUTLET!

SEE US BEFORE YOU BUY!

Economy Truck Tanks, Transports, Skid Tanks, Anhydrous Ammonia Tanks and all types of Steel Fabrications.

VICKSBURG TANK COMPANY, INC.

409 LEE STREET

VICKSBURG, MISS.

13. LPG Vaporizer



A newly developed liquefied petroleum gas vaporizer is claimed to be adaptable to almost all consumer storage tanks. It is made by Holicer Manufacturing & Engineering Corp. and built under the ASME code.

The manufacturer states that this vaporizer will save consumers up to 30% on fuel cost; will save dealers up to 80% of service calls and up to 25% of fuel delivery cost. It eliminates control and regulator freezing because liquid is preheated before entering controls; it is designed to work on butane or propane or mixtures; it will eliminate low pressure gas to appliance and a constant Btu will be maintained even on mixed gases; is quick and easy to install because only the liquid line is connected to vaporizer from tank; does not refrigerate the liquid in storage tank.

The vaporizer is made in sizes to supply a demand of 5 to 50 gal. per hour in single units and any load in battery installations; a new thermostatic safety valve prevents liquid from entering appliance line; it has a high safety factor because burner is sealed in bottom of cabinet. The air for combustion is taken from above cabinet and the exhaust pipe extends to above cabinet.

Holicer Manufacturing & Engineering Co.

LP Gas Dealer* Gains \$1437 profit per truck per year!



Motorola 2-way Radio

cuts waste time and mileage...

helps serve customers better!

Here's how one Motorola-equipped LP Gas Dealer figures the cash benefits of 2-way radio.

Truck costs saved.....	\$ 137.28*
Labor costs saved.....	1040.00**
Telephone calls saved....	260.00
Saved per year per truck..	\$1437.28

*At 33 MPH average speed, 2 hours a day saved for 260 working days equals 17,160 miles per year. 8¢ per mile for gas, oil, depreciation, miscellaneous.

**2 hours working time saved per day for 260 working days at \$2.00 per hour.

Average \$1.00 per day for 260 working days for telephone costs.

Weigh the cost of Motorola 2-way radio against the gains (shown at left)—\$1.00 per day, per truck average including the Motorola maintenance service contract—it doesn't "cost" it pays 3 to 1 on your investment.

And that's not all you get! On-the-spot credit reports to expedite collections, road repairs in record time, new customers added "en route," spectacular elimination of stalls and over-time, more efficient routing, fast customer emergency handling, quick ap-

pointments for appliance sales, and the improved morale of an alert service—all of these can add to your competitive advantage.

Let us send a qualified Motorola engineer to give you the rest of the story. He'll put your interests first and follow through with the support of the largest *exclusively-radio* service organization in the field. Remember—it pays to own your own radio system and it pays to insist on the best while you're doing it.

*Name on file

Motorola Communications & Electronics, Inc.

A SUBSIDIARY OF MOTOROLA, INC.

4501 W. Augusta, Chicago 51, Ill. • Rogers Majestic Electronics, Ltd., Toronto, Canada



14. 30-Year Review

A 30-year statistical review of the liquefied petroleum gas industry has been made available recently by the U. S. Bureau of Mines. It covers in condensed, combined form the substance of annual reports made in recent years which have been elaborately broken down into applications by states and districts, and which have been so helpful to the industry in studying trends and progress.

The first survey covering sales of liquefied petroleum gases was made in 1930, but this covered national

totals for the years 1922 through 1929. In 1922 there was a total distribution of but 223,000 gal. of LPG, as compared to 4,477,379,000 gal. in 1952. Producing companies totaled 13 in 1930 and 130 in 1952.

Scores of fascinating facts are revealed in the numerous tables and graphs and the booklet is one that every L. P. gas dealer will want to have for his files. It has been prepared by A. T. Coumbe and I. F. Avery and is entitled "A Third of a Century of LP-Gas Sales, 1922-52." In writing for it ask for Circular 7684. *Bureau of Mines*

15. Gas Vent Pipe

The new, quick coupling "Metalbestos" gas vent pipe is revealingly described in Metalbestos Catalog No. 6A, and LPG dealers who are selling heating installations will be interested in having this folder. Drawings, photographs and specific instructions for installation are presented and these make possible the correct methods of installing vent pipe, elbows caps, draft hood connectors and ventilated wall thimbles.

The importance of properly venting LPG heating appliances makes this a valuable booklet to have for constant reference. It is available free of cost.

William Wallace Co.

16. Solenoid Valves

Eclipse Fuel Engineering Co. announces the availability of a new four-page bulletin (M-500) covering design and performance characteristics of its line of DO (diaphragm operated) solenoid valves.

This two-color bulletin contains photographs, line drawings, specifications and tables. The complete DO solenoid valve line available in six sizes— $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ in.—is illustrated. Cross section views show open and closed positions of the valve's only two moving parts—solenoid plunger and synthetic rubber diaphragm. Other drawings give over-all valve dimensions.

Specifications cover valve use in control and cycling operations on natural, manufactured, propane and butane fuel gases, sulphur dioxide and other non-corrosive gases. Text also covers electrical characteristics and materials of construction. Tables aid in selection of valves for various pressure ranges—15, 30, 85, 125 and 150 psi.

Bulletin M-500 is available upon request.

Eclipse Fuel Engineering Co.

17. Equipment Catalog

Griffith's complete 20-page catalog, showing the entire line of conversion parts, special servicing tools and appliances, cylinder and appliance handling equipment, along with other related items of gas servicing equipment, is available.

The company has just completed the mailing of the six new supplement sheets to all present holders of the Griffith's catalog to acquaint them with the latest additions to the line which has been expanded to include many of the necessary new items required by the gas industry. *E. F. Griffiths Co.*

APPEARANCE is an asset, too!

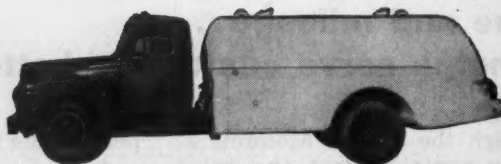
Truck Delivery or Domestic Storage Tanks

built by

BAGWELL-GENERAL

LOOK GOOD! SERVE BETTER! ARE BEST!

- TWIN OR SINGLE BARREL
- LIGHT WEIGHT
- LOW COST
- FULL OR SEMI-STREAM-LINED



1250 to 1450 W.G. Full Streamlined
Single-Barrel

Appearance does make a difference!

The skillful engineering design and fabrication experience that goes into every BAGWELL-GENERAL Tank Unit combines "eye appeal" with the other advantages you need for economical, safe, dependable operation. We're specialists in building units . . . and we can also serve as advisers, too, if you desire. Our suggestions may be profitable to you, or we will build exactly to your specifications.

Call, write or wire us for the solution to your next tank problem.

BAGWELL-GENERAL

Write
P. O.
Box 391

STEEL CO.
SAPULPA, OKLAHOMA

Telephone
Sapulpa 2680
Tulsa 50-8500

PRODUCT NEWS from AMERICAN-Standard

A review of products in the news and important sales points worth remembering



NEW STANFLAME GAS CONVERSION BURNER

The completely redesigned New Stanflame is a real profit-builder for you. It's priced right—costs no more than burners that offer less in quality and design features. Factory-assembled and pre-wired to reduce installation time and labor costs to a minimum. Available with 60,000 to 325,000 Btu inputs, the New Stanflame fits the vast majority of boilers, furnaces and winter air conditioners. Customer-pleasing features include convenient runner-type pilot ignition, quiet-operating Detroit Bi-flex gas valve and timed-cycling thermostat. The New Stanflame is A.G.A. listed for all types of gas.



EMPIRE GAS BOILERS

The Empire by American-Standard is one of the most popular series of gas boilers on the market. And no wonder! Empire boilers are precision-made of cast iron, offering both low first cost and low operating cost. They are highly responsive, provide quick, even, clean heat . . . with a minimum of fuel. Compact and attractive, Empire boilers are ideal for basement, utility room or laundry installation. Available in a practical range of sizes and models for hot water or steam, and for any type of gas. Cast iron sections are factory-assembled, as are piping and control sub-assemblies—features that assure unusually quick and easy installation.

**Ask Your Wholesale Distributor
for Complete Details**

The above products are just two of the many customer-pleasing products from the broad American-Standard line. Your distributor will be glad to give you complete information. Remember, American-Standard offers everything you'll need to sell today's growing modernization market—top quality products, sound merchandising ideas, extensive advertising.



AMERICAN-Standard

American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWAUNEE BOILERS • ROSS EXCHANGERS • SUNDEAM AIR CONDITIONERS

AUGUST, 1954

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ASSOCIATION NEWS

Business Experiences Shared

At Annual TBDA Meet

By Craig Espy

SIX HUNDRED members of the LPG industry attending the ninth annual convention and trade show of the Texas Butane Dealers Association, held in Dallas, June 23-25, got new answers to the problems of handling employees, keeping down to a minimum accounts receivable, selling without cutting prices, and making an operating profit.

These and many other problems came up on the program presided over by J. A. Farrar and sparked by Lyle Blanton, chairman of the convention committee, and W. J. (Bill) Lawson, executive secretary. The program was heavily pointed toward audience participation.

In one of the meetings a number of the successful dealers reached down into their books of experience to share with friends and competitors successful methods developed the past year to handle some phase of their business.

Earl Andrews of Tyler said he

thought the system his company had developed about writing "thank you" letters to customers after purchases had been made was directly responsible for greatly increased sales made during the past 18 months.

Paul Thompson of Westlaco told how his company is staying in business without cutting prices through stepping up service and safety programs. John Wolf, Wichita Falls, told how the building of a garage and repair shop for preventative truck maintenance kept his trucks and equipment operating for a longer time, leading to a higher net profit and greater stability.

Courtesy to customers and customer service were cited by Paul Bohmbalk of Beaumont as the method used by Winton Automatic Gas Co. to hold trade without cutting prices.

E. H. Stromblad of Galveston eliminated obstacles such as high overhead, employee dissatisfaction, and

poor equipment maintenance to show better operating profit and improved safety.

Clyde Crittenden of Bonham developed a customer service program that would sell, and then sold it. Because this service included such practical things as painting tanks for customers and cutting grass around the tanks, his customers were not anxious to buy from every driver that came by.

C. H. Brannon of Fort Worth used gifts of nylon hose to get customers to fill their tanks in May and again in August. Customers come to his store to get the nylon hose, thus getting better acquainted with the company and merchandise offered.

J. F. Andrews of Pleasanton sells his customers on safety of appliances, systems and piping. He mails safety bulletins to customers and takes three-quarter page advertising in the local paper to promote his services.

Ed Skidmore of McKinney promotes better understanding between employees and management. This contributes to a more successful operation and better customer contacts.

John Mock, skilled discussion leader of Chicago, took over the panel after this series of three-minute talks, to present additional ideas showing resourcefulness of dealers, and to promote further discussion from the audience. He also summarized the points brought out by each speaker.

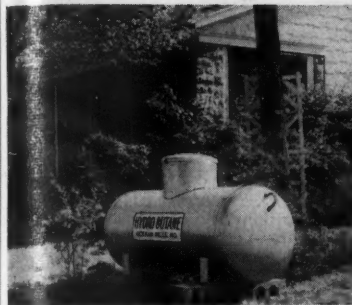
In three imaginative but very realistic skits, Plasco G. Moore, director of distributive education, Texas education agency of Austin, with the aid of several dealers dramatized the "right and wrong" of what takes place daily in many offices in the state.

Title of the skit was "What Would You Do?" The first scene in each skit showed the wrong way to do the thing. Then the audience was asked to suggest what had been done wrong. The actors then re-enacted the scene, doing everything the correct way.

In a talk, "You Can Collect These Small Accounts," the Honorable Waggoner Carr, state representative of Lubbock, told how the Small Claims Court had reduced cost and increased speed in the handling of small claims.



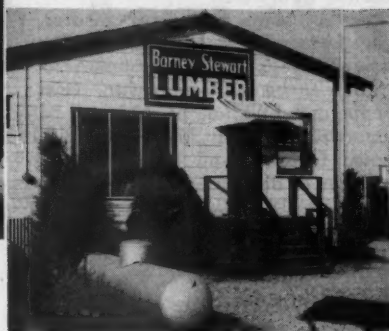
Officers and board members of the Texas Butane Dealers Association are, left to right, first row: Paul Keaton, vice president; W. W. Zwerschke, vice president; Gus J. Moos, secretary-treasurer; Glen Cope, president; C. A. Wood, vice president, and Joe Farrar, ex-president. J. B. Burns, vice president, is not shown. Second row: J. E. Walling Jr., Louis Lehmborg, Aaron E. Smith, J. H. Winton. Third row: Kelley Matchett, Paul L. Thompson, L. W. Gardner Jr., J. B. Wood, E. H. Topliffe.



FOR HOME...



...OR FARM...

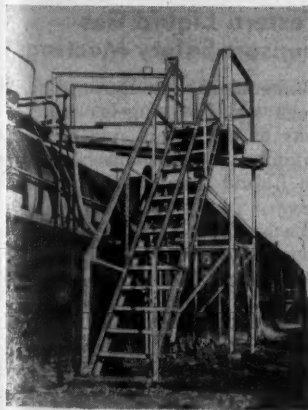
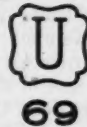


...OR COMMERCIAL INSTALLATIONS



They Fit Right Into Your Sales Picture

Everywhere you look, you'll find a ready-made market for BS&B Propane Systems...and you'll find these quality-built propane systems give you selling points that assure your customers years of trouble-free service! They're tested and inspected *thoroughly*, all during manufacture. For fast sales, easy installation and positive customer satisfaction, sell BS&B "Perfection" Propane Systems!



BS&B Unloading Rack

Stop awkward unloading...minimize fire danger! New BS&B Unloading Rack makes walking sure and easy. Needs only small space, has ladder or stairway on left side, right side or front as you order. Loading drop folds out of way. Shipped knocked down, cut and marked for easy erection.

BLACK, SIVALLS & BRYSON, INC.

Propane Equipment Division, Dept. 6-AB8
7500 East 12th Street Kansas City 26, Missouri



Mr. Carr is author of the Small Claims Court bill.

Gus J. Moos, secretary-treasurer, gave facts in his report about the new home for Texas Butane Dealers Association to be built in Austin. Cost of the new building, he said, will be amortized as rent. Members also voted favorably on increasing the number of districts within the state from 15 to 18, calling for an increase in the membership of the board of directors from 15 to 18.

Glen Cope of Lamesa was elected new president of the association, succeeding J. A. Farrar. Vice presidents elected were: W. W. Zwerschke, Port Lavaca; J. B. Burns, Liberty; C. A. Wood, Linden; and P. A. Keaton, Snyder. Gus J. Moos was re-elected secretary-treasurer.

The following were elected to membership on the board of directors: C. A. Wood, Linden; Earl Persons, Grand Saline; J. B. Burns, Liberty; T. Gubert, Alvin; W. W. Zwerschke, Port Lavaca; Paul Thompson, West-laco; L. Lehmborg, Poteet; O. L. Kas-saw, Burnet; L. W. Gardner Jr., Ham-ilton; J. B. Wood, Farmers Branch; Kelly Matchett, Vernon; D. E. Lan-ders, Roby; E. H. Topliffe, Eldorado; Charles McLure, Van Horn; P. A. Keaton, Snyder; J. W. McDermott, Morton; Van Barbour, Tulia; and E. W. Raef, Amarillo.

Again this year the convention fur-nished complimentary breakfast to guests. Breakfast was served at 8 a.m. and was well attended by deal-ers and their wives. Movies were shown right after breakfast to attract delegates to later sessions. Three afternoons of the conference were given over entirely to attendance of the trade show.

Kenneth McFarland, world trav-eler, lecturer and consultant, spoke at one of the luncheons and Inspec-tor Glenn C. Connor, assistant chief, Texas highway patrol, spoke at an-other. The annual banquet was pre-sided over by J. A. Farrar.

As part of the entertainment for the ladies Gas Equipment Co. pre-sented instructors in the Powers School of Modeling in demonstra-tions of "makedown," walking, com-portment and speech. Squibb Taylor Inc. presented to the lady holding the lucky number in a drawing a free gift certificate worth \$50 in merchandise at Neiman-Marcus.

Estes Park Scene of Mountain States Meet

Estes Park, Colo., was the scene of the recent Mountain States district LPGA convention. Held at the Stanley hotel, the three-day conven-



—Photos courtesy Eaton Metal Products Co., Denver.
Officers and directors of the Colorado LPGA are, left to right: Jim Crawford, Mountain States district, executive secretary; Jim Mulhall, Littleton Gas, director; Burt Sheldon, Ranchers Gas, Cheyenne, director; L. C. Caughran, Southwest Gas, Dover Creek, re-tiring president and director; Charles Jones, United Gas, Colorado Springs, incoming president; and A. B. Morrow, Burlington, Colo., director.

tion included a trade show.

Most of the convention speakers this year were local men from within the L. P. gas industry. "We have found that this type of person can discuss subjects of industry and local interest with much greater authority than someone coming from a dis-tance," said J. C. Crawford, district secretary.

During the business meeting plans were discussed to hold a district man-agement school sometime in March, 1955.

At the Colorado business meeting, held in conjunction with the district meeting, plans were made to promote a new law relating to the special fuel tax and a campaign to amend the current truck tax law.

New officers elected include: C. F. Jones, United Gas Co., Colorado Springs, president; J. C. Crawford, executive vice president; A. B. Mor-row, Butane-Propane Gas Service, Burlington, vice president; J. L. Mul-hall, Littleton Gas & Appliance Co., Littleton, secretary-treasurer; Burt Sheldon, Ranchers Gas & Supply Co., Cheyenne, Wyo., director; and L. C. Caughran, Southwestern Gas & Appliance Co., Dover Creek, director.



W. R. Sidenfaden discusses business with L. C. Caughran of Dover Creek, Colo.

The welcoming address was given by C. A. Graves, mayor of Estes Park, while Fred P. Clatworthy, president, Chamber of Commerce Managers As-sociation, also extended the city's welcome to convention goers.

Other speakers include: W. J. Robinson, "Sell More in '54"; R. Y. Mills, "Time Out for Self-Appraisal"; A. C. Kreutzer, "The Golden Rule Has a Sharp Edge"; Talmage Love-lady, "The Place of Metered Gas Service"; and Lee A. Hayward, "Make It Easy on Yourself."

The Ruud players gave a skit called "Reddy Kilowatt's Downfall."



Colonel Mills of Bastian-Blessing Co. gives his trade mark the once over.

Western Liquid Gas Sponsors Safety Meetings

Bakersfield, San Bernardino, San Diego and Los Angeles were loca-tions of the recent one day safety training meetings sponsored by West-ern Liquid Gas Association during July.

Each of the full day sessions in-cluded a talk by R. A. McHugh, Wil-liam Wallace Co., on "Good Practices of Proper Venting"; Chauncey Weis-man, Division of Industrial Safety, with the local field safety engineer, on "The Importance of the L. P. gas Safety Orders"; George W. Requa,

New Chevrolet Trucks

deliver more power, more ruggedness, for less money!



Making sure the truck you buy has plenty of power and chassis ruggedness is good business in any man's book. Getting the money-saving extra power and ruggedness of Chevrolet trucks is *better* business in any man's bookkeeping.

EXTRA POWER MEANS BIGGER SAVINGS

No doubt about it, the extra power you get from new high-compression Chevrolet truck engines means you're going to pay out less for gasoline. Over a year, that adds up to a sizeable savings. Increased power brings time-saving benefits, too—greater acceleration and hill-climbing ability . . . you haul faster, get the job done quicker!

GREATER RUGGEDNESS CUTS OPERATING COSTS

Heavier axle shafts and wheel hubs on two-ton models; bigger, more durable clutches on light- and heavy-duty

models; stronger, more rigid frames on all models. These features pay off in extra-low upkeep costs . . . extra miles of dependable truck life.

But these *while-you-drive* savings aren't all, by a long shot. You even save *when you buy*. For Chevrolet is America's lowest-priced line of trucks. Stop by your Chevrolet dealer's soon to see the "savingest" trucks on the road. He'll show you models ideally suited to your job, with facts to prove you'll get more for your money. Chevrolet Division of General Motors, Detroit 2, Mich.



**MOST TRUSTWORTHY TRUCKS
ON ANY JOB!**

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **NEW TRUCK HYDRA-MATIC TRANSMISSION***—offered on ½-, ¾- and 1-ton models. Heavy-Duty **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—improved-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **NEW RIDE CONTROL SEAT***—eliminates back-rubbing. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

*Optional at extra cost. Ride Control Seat is available on all cabs of 1½- and 2-ton models, standard cabs only in other models. "Jobmaster 261" engine available on 2-ton models, truck Hydra-Matic transmission on ½-, ¾- and 1-ton models.

Mr. Carr is author of the Small Claims Court bill.

Gus J. Moos, secretary-treasurer, gave facts in his report about the new home for Texas Butane Dealers Association to be built in Austin. Cost of the new building, he said, will be amortized as rent. Members also voted favorably on increasing the number of districts within the state from 15 to 18, calling for an increase in the membership of the board of directors from 15 to 18.

Glen Cope of Lamesa was elected new president of the association, succeeding J. A. Farrar. Vice presidents elected were: W. W. Zwerschke, Port Lavaca; J. B. Burns, Liberty; C. A. Wood, Linden; and P. A. Keaton, Snyder. Gus J. Moos was re-elected secretary-treasurer.

The following were elected to membership on the board of directors: C. A. Wood, Linden; Earl Persons, Grand Saline; J. B. Burns, Liberty; T. Gubert, Alvin; W. W. Zwerschke, Port Lavaca; Paul Thompson, Westlaco; L. Lehmborg, Poteet; O. L. Kasaw, Burnet; L. W. Gardner Jr., Hamilton; J. B. Wood, Farmers Branch; Kelly Matchett, Vernon; D. E. Landers, Roby; E. H. Topliffe, Eldorado; Charles McLure, Van Horn; P. A. Keaton, Snyder; J. W. McDermett, Morton; Van Barbour, Tulia; and E. W. Raef, Amarillo.

Again this year the convention furnished complimentary breakfast to guests. Breakfast was served at 8 a.m. and was well attended by dealers and their wives. Movies were shown right after breakfast to attract delegates to later sessions. Three afternoons of the conference were given over entirely to attendance of the trade show.

Kenneth McFarland, world traveler, lecturer and consultant, spoke at one of the luncheons and Inspector Glenn C. Connor, assistant chief, Texas highway patrol, spoke at another. The annual banquet was presided over by J. A. Farrar.

As part of the entertainment for the ladies Gas Equipment Co. presented instructors in the Powers School of Modeling in demonstrations of "makedown," walking, comportment and speech. Squibb Taylor Inc. presented to the lady holding the lucky number in a drawing a free gift certificate worth \$50 in merchandise at Neiman-Marcus.

Estes Park Scene of Mountain States Meet

Estes Park, Colo., was the scene of the recent Mountain States district LPGA convention. Held at the Stanley hotel, the three-day conven-



—Photos courtesy Eaton Metal Products Co., Denver.

Officers and directors of the Colorado LPGA are, left to right: Jim Crawford, Mountain States district, executive secretary; Jim Mulhall, Littleton Gas, director; Burt Sheldon, Ranchers Gas, Cheyenne, director; L. C. Caughran, Southwest Gas, Dover Creek, retiring president and director; Charles Jones, United Gas, Colorado Springs, incoming president; and A. B. Morrow, Burlington, Colo., director.

tion included a trade show.

Most of the convention speakers this year were local men from within the L. P. gas industry. "We have found that this type of person can discuss subjects of industry and local interest with much greater authority than someone coming from a distance," said J. C. Crawford, district secretary.

During the business meeting plans were discussed to hold a district management school sometime in March, 1955.

At the Colorado business meeting, held in conjunction with the district meeting, plans were made to promote a new law relating to the special fuel tax and a campaign to amend the current truck tax law.

New officers elected include: C. F. Jones, United Gas Co., Colorado Springs, president; J. C. Crawford, executive vice president; A. B. Morrow, Butane-Propane Gas Service, Burlington, vice president; J. L. Mulhall, Littleton Gas & Appliance Co., Littleton, secretary-treasurer; Burt Sheldon, Ranchers Gas & Supply Co., Cheyenne, Wyo., director; and L. C. Caughran, Southwestern Gas & Appliance Co., Dover Creek, director.



W. R. Sidenfaden discusses business with **L. C. Caughran** of Dover Creek, Colo.

The welcoming address was given by C. A. Graves, mayor of Estes Park, while Fred P. Clatworthy, president, Chamber of Commerce Managers Association, also extended the city's welcome to convention goers.

Other speakers include: W. J. Robinson, "Sell More in '54"; R. Y. Mills, "Time Out for Self-Appraisal"; A. C. Kreutzer, "The Golden Rule Has a Sharp Edge"; Talmage Lovelady, "The Place of Metered Gas Service"; and Lee A. Hayward, "Make It Easy on Yourself."

The Ruud players gave a skit called "Reddy Kilowatt's Downfall."



Colonel Mills of Bastian-Blessing Co. gives his trade mark the once over.

Western Liquid Gas Sponsors Safety Meetings

Bakersfield, San Bernardino, San Diego and Los Angeles were locations of the recent one day safety training meetings sponsored by Western Liquid Gas Association during July.

Each of the full day sessions included a talk by R. A. McHugh, William Wallace Co., on "Good Practices of Proper Venting"; Chauncey Weisman, Division of Industrial Safety, with the local field safety engineer, on "The Importance of the L. P. gas Safety Orders"; George W. Requa,

New Chevrolet Trucks

deliver more power, more ruggedness, for less money!



Making sure the truck you buy has plenty of power and chassis ruggedness is good business in any man's book. Getting the money-saving extra power and ruggedness of Chevrolet trucks is *better* business in any man's bookkeeping.

EXTRA POWER MEANS BIGGER SAVINGS

No doubt about it, the extra power you get from new high-compression Chevrolet truck engines means you're going to pay out less for gasoline. Over a year, that adds up to a sizeable savings. Increased power brings time-saving benefits, too—greater acceleration and hill-climbing ability . . . you haul faster, get the job done quicker!

GREATER RUGGEDNESS CUTS OPERATING COSTS

Heavier axle shafts and wheel hubs on two-ton models; bigger, more durable clutches on light- and heavy-duty

models; stronger, more rigid frames on all models. These features pay off in extra-low upkeep costs . . . extra miles of dependable truck life.

But these *while-you-drive* savings aren't all, by a long shot. You even save *when you buy*. For Chevrolet is America's lowest-priced line of trucks. Stop by your Chevrolet dealer's soon to see the "savingest" trucks on the road. He'll show you models ideally suited to your job, with facts to prove you'll get more for your money. Chevrolet Division of General Motors, Detroit 2, Mich.



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Western Liquid Gas Association, "Round Table, What Programs Do You Want?"; and George D. Walters, L. P. gas Safety Society, on "Managements' Responsibility for Safe Operations and Its Relation to Insurance." Varying personnel from Minneapolis-Honeywell Co. gave the "Basic Fundamentals of L. P. Gas Controls."

The day's sessions included a welcome by the local chairman, lunch, with a speaker of industry interest, and a final presentation of certificates for participation in the safety training program.

ABDA Hears DeLaughter Appeal for Higher Profits

Those attending the 15th annual convention of the Arkansas Butane Dealers Association, held in Little Rock recently, heard G. W. DeLaughter, vice president of the association, make a strong appeal in the interest of higher profits for the industry.

"If you pay 7 cents per gallon for gas," Mr. DeLaughter said, "you must sell that gas for 12.4 cents per gallon in order to break even. Actual cost of handling gas," he pointed out,

"based on findings of one of the LPG producer marketing companies, is 1 cent per gallon. It costs 1.2 cents per gallon for driver salary; 1 cent per gallon for storage (whether you own storage or go to the bulk plant to pick up fuel); 1.2 cents for general overhead; 1 cent per gallon minimum profit."

Mr. DeLaughter urged dealers to employ the principle of the golden rule before attempting to raid another dealer's area, using cut price tactics as the basis.

Ottis Cash presided over the conference which elected the following officers for the ensuing year: James A. Moseley Jr., Little Rock, president; R. A. Carver, Mena, vice president; and Ottis Cash, Warren, finance chairman.

District governors elected were: J. R. David Jr., Caraway; E. J. Fricks, Texarkana; A. F. Dixon, Ft. Smith; George W. DeLaughter, Sparkman.

The following were named directors: F. M. Meek, Marvell; J. J. Shackelford, Bentonville; Roy Thrash, Hope; Alex Hill, Blytheville; Joe Bob Dodson, Camden; Leonard Warden Jr., West Memphis; Earl Scott, Hamburg; Will Evans Leek, Dumas; Tommy Griffin, Benton.

In an address on "Consumer Promotion," Lee A. Brand, Empire Stove Co., reviewed reasons for the phenomenal growth of the industry and urged delegates "to sell more by telling more about benefits derived from the use of L. P. gas." Mr. Brand was also called upon for an address following one of the luncheon periods.

Morris H. Wright, LPG Credit Corp., praised the industry for its sound financial position. He suggested that every dealer question himself as to whether he had an adequate accounting system, was practicing sound operating principles, had adequate storage, was making adequate profit, was following good installation and servicing practices, and maintaining proper inventory balance. He also pointed out that it was necessary for the dealer to have adequate insurance.

William F. Leonard Jr., safety director, Southland Corp. of Dallas, urged dealers to practice safety and to teach all operators to follow rules of safety. He told the delegates that accidents in the U. S. cost enough each year to build one million six-room homes. He pointed out that the human element in industry accounts for 88% of the accidents, while 12% of the accidents are caused by failure of mechanical equipment.

Pointing out that the business of the L. P. gas industry is based on credit, Lera Jeanne Rowlette, mem-



When you buy LP-Gas from Carter, you have the assurance of high quality and dependable service. Years of experience in producing and marketing LPG make Carter an unexcelled supplier.

THE CARTER OIL COMPANY
TULSA, OKLAHOMA



**NOTICE HOW MANY MORE DEALERS ARE
BUYING McNAMAR...**

HERE'S WHY . . .

- F.I.T. that saves you money on laid-in prices
- Fair and just price
- Meets and exceeds requirements in all states
- UL fitting arrangement for your convenience



McNAMAR
BOILER & TANK CO.
BOX 868 • TULSA, OKLAHOMA

ber Arkansas Legislature from Texarkana, made numerous suggestions to dealers about making conditional sales contracts. Her talk was considered by the dealers to be very practical from the standpoint of establishing better credit relations. (See page 86.)

Governor Francis Cherry of Arkansas also appeared on the program. He made specific reference to the splendid safety record attained by Arkansas members of the L. P. gas industry.

E. DeMott Henderson of Little Rock brought a report on what the legislative committee is doing toward the establishment of the new LPG



Officers, and some of the directors and district governors elected at the Arkansas Butane Dealers Association are (left to right): E. J. Fricks; Alex S. Hill; George W. DeLaughter; F. M. Meek; Dick Carver, vice president; Earl Scott; Joe Shackelford; Jim Mosley, president; Ottis Cash, finance chairman; and Tommy Griffin.

regulation act. The proposed new law, he pointed out, is being patterned after the Louisiana law.

R. R. Moulden, Moulden Supply Co., Jackson, Miss., addressed the conference on "Tests and Measurements." He told the delegates what has been accomplished in the meter testing program now under way in Mississippi.

In closing sessions, the conference took important action in appointing as home economists Miss Martha Sexton of Cabot, and Miss Sue Huffaker of Beebe. The home economists will work with dealers of the state in demonstrating proper cooking methods and proper use of home appliances.

At the annual banquet, A. W. "Johnnie" Porter, executive secretary, presented distinguished service awards in the name of the association to Ottis Cash, outgoing president; Richard A. Carver, one of the district governors; and Joe J. Schmelzer of Arkansas Foundry.

Arkansas Rice Growers Association and Arkansas Poultry Federation, in cooperation with the home demonstration clubs of Arkansas, sponsored a rice and chicken luncheon, held the last day of the convention. Joe J. Schmelzer, Arkansas Foundry, addressed one of the luncheon groups on the subject "So You Have Been to Europe." Rev. Riley Munday, state director, Baptist student union of Little Rock, served as inspirational speaker at two of the meetings. Duke Sweeney of Delta Tank Manufacturing Co. was master of ceremonies for the "Western Jam-boree."

Ourusoff Tells AGA to Utilize Advantages of Gas

Anything competition may offer against the inherent advantages of gas for cooking is relatively inconsequential. The fundamental problem of the gas industry is not matching the few and minor advantages of competitive ranges but that of incorporating in practice the many and basic advantages of gas ranges.

This challenging statement sounded the keynote of the ninth annual

If you install gas venting...

METALBESTOS

will save you money!



EASY, FAST INSTALLATION

It doesn't take a crew to install Metalbestos — one man can easily handle the lightweight sections. Special couplers align pipe accurately, speed vent assembly. Adjustable fittings simplify installation problems, eliminate cutting and fitting.

LESS DAMAGE AND WASTE

Metalbestos is an all-metal vent — it will not crack or break. The sturdy outer pipe resists damage during handling and installation, serves as a protective jacket for the inner aluminum "hot stack."

FEWER SERVICE CALLS

You can install Metalbestos and forget it. Its double-wall, insulated design... permanently gastight joints... and sturdy, durable construction assures safe, dependable venting with no costly repairs or replacement.

A COMPLETE LINE OF TYPE B VENTS

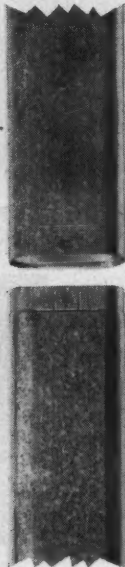
Approved by Underwriters' Laboratories. Correctly designed for use with all approved gas appliances requiring Type B vents. (Not for use with oil-burning appliances or gas-fired incinerators.)

QC METALBESTOS Round Vent — for standard venting applications where space is not restricted.

WV METALBESTOS Oval Vent — specially designed for in-the-wall venting.



QC



WV

Complete line of fittings available for both round and oval vent systems.

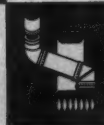


TYPE B-W INSTALLATION KIT

Simplifies venting of recessed wall heaters — fits inside 2 x 4 walls without furring out. Contains all fittings and directions needed to make safe, officially correct installation. Designed for use with WV Metalbestos pipe.



USE METALBESTOS FOR THE BEST JOB AT THE LOWEST COST
Stocked by principal jobbers in large cities. Factory warehouses in Atlanta, Dallas, Philadelphia, Kansas City, Chicago, New Orleans.



METALBESTOS

DIVISION

WILLIAM WALLACE COMPANY • BELMONT, CALIF.

remember!

ONE SERVEL SALE

means a

Double Profit for You!

1

SERVEL, the Gas Refrigerator, is different because it's the only refrigerator that makes ice cubes without trays and puts them in a basket... all automatically! The only refrigerator with no moving parts in its freezing system... stays silent, lasts longer. Only SERVEL Gas Refrigerators offer a ten year warranty... the longest and strongest warranty you'll find. No other refrigerator in the world has these outstanding sales advantages.

2

SERVEL, the Gas Refrigerator, forges the final link for the all gas kitchen... safeguards domestic load! The amazing, profitable SERVEL is also a constant source of steady, day-in and day-out revenue throughout the year. The SERVEL Gas Refrigerator with all its outstanding features will not only maintain that gas kitchen load but will further popularize gas... the modern fuel.

no messy ice trays!



Simply pick the dry, loose, super-cold IceCircles out of the basket. The new Servel refills itself, then turns off, automatically! From automatic defrost, to the separate freezer compartment, to door shelves, to the trip-saver handle, this new Servel has every deluxe feature your customers ever wanted plus the refrigeration miracle of ice "cubes" without trays — automatically!

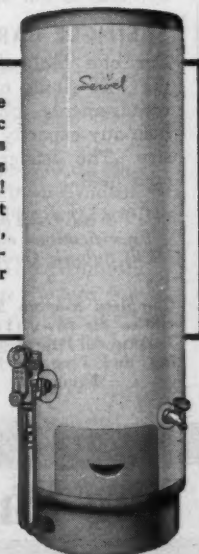


SERVEL AD DRIVE STARTS THIS MONTH!

Get complete information on how you can cash in on this great advertising and promotional drive with TV, radio, newspapers and billboards in your own local area!

SEE YOUR SERVEL DISTRIBUTOR TODAY!

A complete line of fully automatic gas water heaters in a range of sizes to fit every need! Servel — the most dependable, trouble-free automatic water heater on the market!



Servel

The name to watch
for great advances in
REFRIGERATION and AIR CONDITIONING

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research and utilization conference held in Cleveland recently under the auspices of the American Gas Association's committee on domestic gas research and utilization bureau. The speaker was Leon Ourusoff, Washington Gas Light Co.

Mr. Ourusoff blamed the lag between theory and practice in gas range design on a lackadaisical attitude by some sections of the industry. He pointed to the experimental units developed at the laboratories as a demonstration of the real flexibility and superiority of gas.

The gas industry is not getting its

share of the air conditioning load, Mr. Ourusoff said. He recommended that the industry concentrate on the promotion of residential absorption units and support to the highest possible degree the manufacturer who developed the only unit presently available. Research that will bring further improvement of absorption systems should be encouraged. The industry also should initiate without delay the long-range development of other applications of gas to air-conditioning based on the findings derived from current studies and surveys.

Pilot design, construction and per-

formance were described in a paper by C. H. Pountney Jr. of the ACA laboratories staff. Prof. Eugene F. Hebank, University of Illinois, reported on an investigation of automatic storage-type domestic water heaters. A study of laboratory tests of gas and electric water heaters showed energy rates were favorable to gas.

Kelley Talks Sales At Annual Missouri Meet

"It is going to take more and better trained retail salesmen to sell more in '54," according to Ralph V. Kelley, sales promotional manager, Skelly Gas Division of Skelly Oil Co. Addressing the ninth annual convention and trade exhibit of the Missouri LPGA, Mr. Kelley built his talk around the mechanics of making a sale.

He pointed out that a salesman should "drive forward" every second



New officers of the Missouri LPGA are, left to right: J. C. Edmonston, Hornersville, president; A. D. Bradley, Monett, treasurer; and Paul Sims, Albany, vice president.

for an order, since he is in the presence of a buyer for only a small percentage of his time. When questions of price and value come up, Mr. Kelley said, "Establish the value of the product in the mind of the customer before dealing with the subject of price."

Approximately 500 registered for the recent convention, held in Kansas City. L. C. Fritts, president, stated that the convention broke all records for the number of exhibitors present, with 43 manufacturers showing their products.

Discussing "The Folly of Price Cutting," T. G. Tackett, National Butane Gas Co., Memphis, stated that there is only one way to establish a sales policy that will produce a satisfactory profit. "You must know the cost of the item," he said, "the cost of what you propose to furnish the customer, by way of service and safety, and the legitimate profit you intend to make on the sale."

Attacking the problem directly, Mr. Tackett told how price cutting



SERVICE • QUALITY • SATISFACTION

A Complete Line of Single and Twin Barrel Propane Truck Tanks

TWIN BARREL

Very popular model. Can furnish in any capacity you desire. Custom made, to your specifications. A unit to be proud of.



TWIN BARREL

TRANSPORTS

Can furnish in single or twin barrel type. Unit constructed so load can easily be shifted to meet different type tractors. Payload makes you money, this is our specialty.



TRANSPORT

SINGLE BARREL

For one fuel operation, the 1200 single meets all requirements, can furnish any capacity you desire. The leader in its own field.



SINGLE BARREL

Send Us Your Specifications and We Will Submit Quotations.

Complete Modern Shop Facilities for Mounting and Testing All Pumping, Metering and Propane Handling Equipment.

"EVERYTHING IN LPG AND ANHYDROUS AMMONIA"
The Pasley Mfg. & Dist. Co.

603 East 11th Street • Kansas City, Mo. • Tel. Victor 2367



Protect lives . . . guard property with a PROTECTOSPRAY SYSTEM FOR LPG STORAGE

Fire and explosion hazards from liquefied petroleum gas occur mainly when there is leakage. At such times, and if disaster is to be averted, several things become immediately necessary, whether or not ignition occurs.

1. The leak must be located and the leakage stopped. ProtectoSpray protection provides a margin of safety for the personnel doing this work.
2. Heat transfer to the storage tanks must be prevented to avoid build-up of rupturing pressure within the tanks. Properly engineered fixed water spray protection provides effective cooling of tanks to prevent pressure build-up.
3. Positive air turbulence should be provided to hasten dilution of escaped gas to make the mixture too lean to burn. Water spray, without dependence upon wind to assist it, provides sustained air movement which hastens the dilution of escaped LPG.

4. Additional inert vapor should be provided to speed the dilution of escaped LPG. Water spray is an abundant source of such inert vapor, the finer droplets in the spray vaporizing to produce inert water vapor.

5. If escaped gases ignite, the wide and evenly distributed pattern of fine water droplets from Grinnell ProtectoSpray nozzles permit safe, controlled burning of gases.

For any fire protection problem, call on Grinnell. There is a Grinnell Fire Protection System for every fire hazard. Grinnell Company, Inc. 272 West Exchange Street, Providence, R. I.



GRINNELL

PROTECTION AGAINST EVERY FIRE HAZARD



Manufacturing, Engineering and Installation of Automatic Sprinklers since 1878

presents a distinct injury to the L. P. gas industry, injury to the supplier, injury to the operator and injury to the consumer through reduction of quality of the product and limitations placed on service.

Called back again following his strong address on atomic energy a year ago, Orville Roberts delivered an equally forceful message to convention goers this year, decrying what he called the trend in so many tax-supported colleges and universities to deride traditional American concepts.

In a talk entitled "Don't Bargain—

Demonstrate," E. S. Kleinmann, vice president, Dearborn Stove Co., pointed out that the primary job of an L. P. gas dealer and salesman is to make the wants of the people come alive. "Needs are different from wants," he said. "Needs are the things we require. Wants are the things we are interested in having."

In striking at the fallacy of price cutting, Mr. Kleinmann pointed out that price cutting never did a selling job. "Price doesn't mean anything," he said, "if people want to buy what you have." He also showed dealers how to generate sales ideas and trans-

mit them to the prospect through demonstration and showmanship.

In addressing the dealers on "What SBA can do for you," C. I. Moyer, regional director of the Small Business Administration for Missouri, Kansas, Iowa and Nebraska, spoke glowingly of the future of the L. P. gas industry when he stated that America is definitely going suburban. He further complimented the dealers by saying the L. P. gas industry has the highest credit rating in his district of all other small businesses.

J. C. Edmonston, Hornersville, was elected president of the Missouri LPGA in closing sessions of the convention. Other officers elected were Paul Sims, Albany, vice president; and A. D. Bradley, Monett, treasurer.

New directors elected include E. L. Henze, St. Joseph; H. S. Ragan, Kahoka; John Riley, Sedalia; Carl Schmitz, Lamar; J. A. Felder, St. Louis; Joseph Whipple, Springfield; G. E. Rayfield, Ellington; Charles Baker, Kennett; and George Dean.

Favorable comments were made by many pertaining to the social side of the conference. The Las Vegas "Nite" party was well attended. A buffet dinner and Hawaiian party were held the closing night. K. H. Dickson was chairman of the convention and trade show committee.

Utah LPGA Holds Annual Meeting

The Utah LPGA convention and trade show were held at the Hotel Newhouse, Salt Lake City, recently with about 150 members and guests in attendance.

Featured speakers and their topics were Robert Strawn Jr., speaking on "Weed Burning"; F. W. Commins, "Industrial Applications"; D. E. Smith, "Finance and Credit Management"; and Carl Abell, "The Private Part of Public Relations." J. C. Crawford presented an illustrated talk on "Time Out For Self Appraisal," which had been one of the highlights of the 1953 national convention.

W. B. Searles of Vernal was re-elected president, O. C. Wiggle of Moab was elected vice president, and D. R. Bolton, Salt Lake City, was re-elected secretary-treasurer.

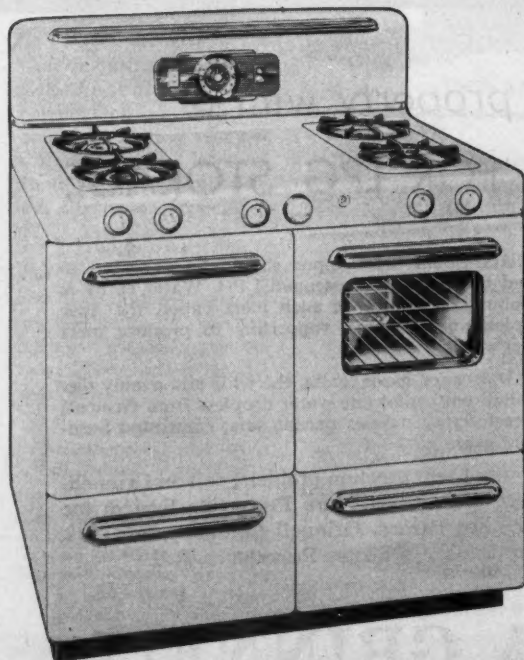
Sidenfaden Announces LPGA Sectional Chairmen

W. R. Sidenfaden, LPGA president, has announced the appointment of the new sectional chairmen for 1954-55.

Chairman of the appliance manufacturers section is Julius Klein, Caloric Stove Corp., Philadelphia;

Sell most of the women
most of the time
with

Enterprise



YOU CAN'T sell all of the women all of the time, no matter what your product is. But you **can** sell most of the women most of the time with Enterprise gas ranges.

HERE'S WHY. Compare the features of the model shown here with those of "big name" ranges. Those "big name" ranges with identical features carry a much heavier price tag. That's why Enterprise appeals to most women most of the time.

WHAT'S IN IT FOR YOU? Profit and volume. You set your own profit margin, have plenty of latitude for trading. Volume? Yes. Because you can sell Enterprise for a price that fits every budget.

ALL YOU CAN LOSE is a three-cent stamp. Get the full story by writing:



WRITE TODAY FOR FULL INFORMATION

Serving a value-conscious America for nearly 100 years

PHILLIPS & BUTTORFF MANUFACTURING COMPANY
NASHVILLE, TENNESSEE

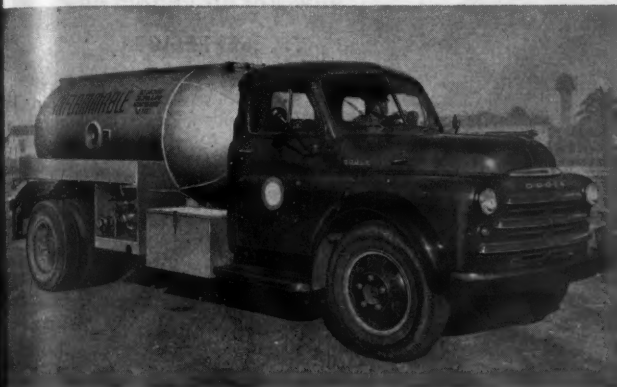
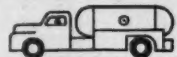
OVER FIFTY YEARS EXPERIENCE

in designing and manufacturing equipment for

TRANSPORTATION AND STORAGE



of petroleum products



AMERICAN is one of the largest manufacturers of L. P. G. transportation equipment on the West Coast.



X-rayed and stress-relieved for lighter construction -- greater payload!

Truck and Trailer Equipment for Bulk Transportation

American DELIVERY TRUCK TANKS

American LP Gas Delivery Truck Tanks give you maximum service. High-tensile steel construction. Hemispherical heads streamline the tank and reduce surge impact. All fittings are recessed for safety. Conveniently-located large connections provide highest loading and discharge rates. The mounting of each truck is engineered to make the unit handle with ease, minimize tire wear and maintenance. Tank is flexibly mounted to truck frame to eliminate localization of stress. Each unit is tested and approved by proper authority—meets I.C.C. requirements and is registered with I.C.C. Convenient sizes available.

• Fittings included:

Recessed Relief Valve
or Valves
7" Rotary Gauge
2-Outlet Valves
(fixed liquid levels)
Thermometer Well
Pressure Gauge
Painted with one coat
of primer

Mounting generally
longitudinal sill type
1/3" Liquid Outlet with
Excess Flow
1/2" Liquid By-Pass with
Excess Flow
1-2" Vapor Return
1 3/4" Vapor Return (2" bushed
down to 3/4")
1/3" Liquid Fill

Safety Valves as required

American TRANSPORT TANKS

For bulk transportation, American Transport Truck and Trailer Tanks are available in any size to suit your needs. Frameless or sill-mounted, they meet I.C.C. requirements and are registered with I.C.C.

STORAGE TANKS

From the famous line of Red Head domestic tanks, either top or end fitted, to the largest bulk storage units.

ANHYDROUS AMMONIA FIELD

We manufacture a full line of stationary and portable storage tanks, field tanks, field trailer tanks and applicator tanks.



Liquefied Gas Division

AMERICAN
PIPE & STEEL CORPORATION

Established 1903

Designers
Engineers
Fabricators
Erectors
★
Steel
Aluminum
Alloys

ALHAMBRA, CALIFORNIA • CUMBERLAND 3-2181 • LOS ANGELES SALES OFFICE: MUTUAL 1368

equipment manufacturers section chairmanship went to T. V. Scott of the Weatherhead Co., Cleveland. Chairmanship of the international section will be held by Norman A. Evans, Pressed Steel Tank Co., Milwaukee. The new chairman of the marketers section is R. L. Epple, of the R. L. Epple Butane Gas Service Inc., Tecumseh, Okla.

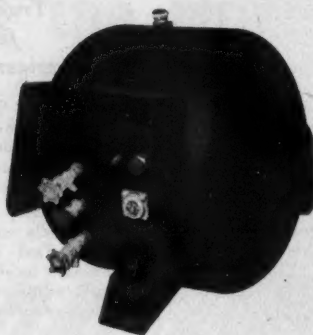
Heading the producers section will be T. F. Shaffer of the Shell Oil Co., New York. Chairman of the tank fabricators section is Walter Buehler, Buehler Tank and Welding Works,

Los Angeles; and chairman of the utilities section is Charles E. Tenney, Willmar Gas Co. Inc., Willmar, Minn.

Western Liquid Gas Loses J. L. Potter

The resignation of J. L. Potter as executive vice president of the Western Liquid Gas Association was accepted at a recent meeting of the board of directors. The board sent regrets to Mr. Potter and appreciation for the work that he has done.

only WESTERN tractor tanks give you all three of these important sales features . . .



Farmall — M Factory Cross-Mount

- 1** **Furnished in tractor's color**
Your customers prefer the added convenience and smart appearance of Western Tanks, furnished in appropriate tractor colors.
- 2** **Factory design**
Assures your customers of a better fit without altering tractor. For instance, on the Farmall M Tank shown, you simply remove the gasoline tank, bolt this tank in place without moving air-cleaner or altering hood.
- 3** **Greater capacity**
The 39 gallon capacity of the Farmall M Tank means your customers can run all day without refueling. Less stops and starts mean greater profits for him.

Western Tank & Steel Corp. manufactures only Custom Tractor and Vehicle Motor Fuel Tanks. Design, engineering and construction can be, and are keyed to your customer's needs.

Write for complete price list and further information.

Dealer's net price
of Farmall — M Factory Cross-Mount \$78.50

Regional distributorships still available in some sections of the country.



Phone 5-7517

Box 1013

Lubbock, Texas



CALENDAR

All associations are invited to send in dates of their forthcoming meetings for this calendar.

1954

AUGUST

August 8-10—Alabama LPGA. Annual convention, Bottle House, Mobile.

SEPTEMBER

Sept. 10—Pennsylvania LPGA. Annual convention, Penn Harris hotel, Harrisburg.

Sept. 15-17—National Petroleum Association. Annual meeting, Traymore hotel, Atlantic City, N. J.

Sept. 17—Natural Gasoline Association of America. Oklahoma regional meeting, Skirvin hotel, Oklahoma City.

Sept. 19-21—New Mexico LPGA. Convention, La Fonda Hotel, Santa Fe.

Sept. 24-26—Wisconsin LPGA. Fall meeting, Dell View hotel, Wisconsin Dells.

Sept. 27-28—Symposium on L. P. gas testing methods. Hotel Statler, St. Louis, Mo.

Sept. 27-28—Virginia LPGA. Annual convention, Hotel Roanoke, Roanoke.

OCTOBER

Oct. 11-13—AGA. Convention, Atlantic City, N. J.

Oct. 17-19—Ohio LPGA. Annual convention, Neil House, Columbus.

Oct. 18-19—Kansas LPGA. Convention, Hotel Broadview, Wichita.

Oct. 18-24—National Safety Congress. Chicago.

Oct. 29—Natural Gasoline Association of America. Southern regional meeting, Blackstone hotel, Tyler, Texas.

NOVEMBER

Nov. 4-5—Illinois LPGA. Fall convention, St. Nicholas Hotel, Springfield.

Nov. 8-11—American Petroleum Institute, Conrad Hilton hotel, Chicago.

Nov. 15-17—American Standards Association. Roosevelt hotel, New York.

HERE'S HOW YOU SAVE WITH FORD TRIPLE ECONOMY

You get more truck for your money in a FORD

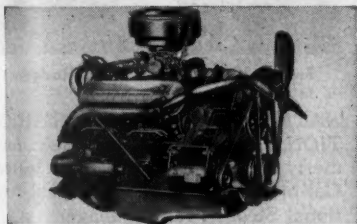
From front to rear axle,
new Ford Triple Economy saves
you money all the way

• In every Ford Truck you'll find a new gas-saving, Low-FRICTION engine. For greater driving ease that helps keep the driver alert on the job, there's Ford's famous *Driverized* Cab. And every Ford Truck has a strong, low-weight chassis for money-saving, trip-saving capacity. For complete information, see your Ford Dealer *today!* Or write: Ford Division, Ford Motor Co., Dept. T-64, Box 658, Dearborn, Mich.



BE CAREFUL—
DRIVE SAFELY

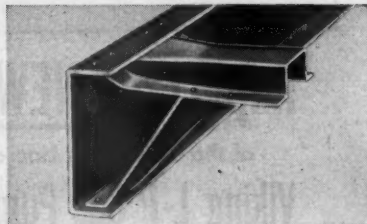
Low-cost leader of extra heavy work! New Ford F-700 Big Jon hauls 19,500 lbs. GVW, pulls up to 34,000 lbs. GCW. Choose from 15 models —5 wheelbases—powered by the all-new 138-h.p. *Power King* V-8.



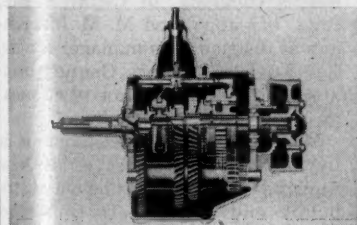
New 138-h.p. *Power King* V-8 is one of the most powerful in its class, with up to 44% more power per cu. in. than other makes.



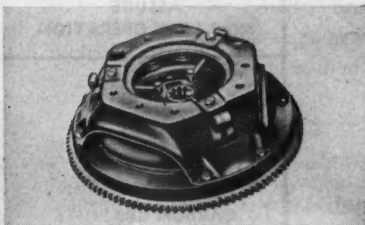
Driverized Cab has free-breathing woven plastic upholstery, exclusive seat shock snubbers. *Deluxe Driverized* Cab shown.



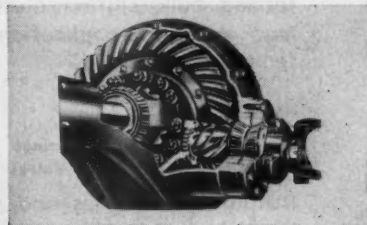
Extra heavy-duty frame has rugged parallel side rails 9 in. deep—high strength and rigidity without excess weight.



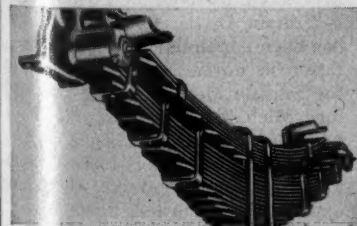
4-speed Synchro-Silent transmission. 5-speed Synchro-Silent transmission; direct or Overdrive, also available.



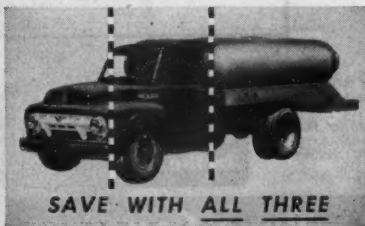
Big 11-in. Gyro-Grip clutch is of semi-centrifugal design—gives you high plate pressures, yet requires low pedal pressure.



Single-speed hypoid rear axle has big, quiet running pinion. 2-speed planet-type electric-shift hypoid axle is available.



High capacity, wide-span rear springs are 52" x 3" with 37½" x 3" auxiliary for balanced load suspension, smooth riding.

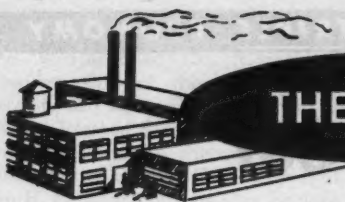


SAVE WITH ALL THREE

1. Gas-Saving Power! 2. Driver-Saving Ease! 3. Money-Saving Capacities! And . . . Ford Trucks last longer!

FORD TRIPLE ECONOMY TRUCKS

MORE TRUCK
FOR YOUR MONEY!



THE TRADE



UNITED PETROLEUM GAS CO.—
F. T. Carpenter, president of United Petroleum Gas Co., of Minneapolis, announces the opening of a new office of the company in Tulsa, Okla., located in the McBirney Bldg., 8 East Third St.

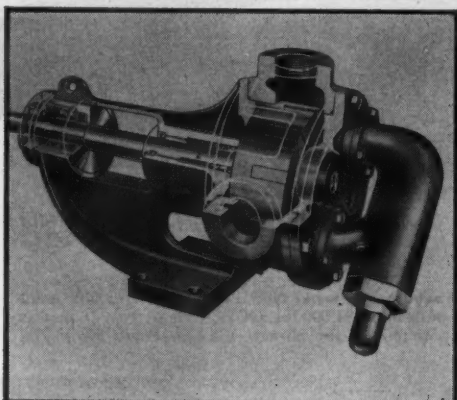
Fred S. Victor, formerly with Universal Petroleum Co., of Tulsa, who recently joined United, will be in charge of the office. The Tulsa office will supervise product supply for the company, and Mr. Victor, in addition, will supervise the activities of Unit-

ed's Houston and Midland, Tex. offices.

Mr. Victor has a long record of experience in the L. P. gas industry. He spent 13 years in the purchasing, refining and LPG product supply departments of the Phillips Petroleum Co., plus two years with Universal. He joined the United organization in April of this year.

Robert E. Haugen has been named sales representative for United Petroleum in the Dakotas and western Minnesota. The appointment coincides with establishment of this area as a separate service district for the company, according to F. H. Andrews, vice president of the company.

Mr. Haugen has spent the past six years in United's transportation and supply department in the headquarters office, correlating shipments and allied subjects for all of United's customers.



**SIMPLE, FIELD-PROVED
MECHANICAL SEAL**

Important NEW features

of the 200 Series Line of
Viking L-P Gas Pumps

All Viking LP-gas pumps for motorized bulk station units and truck mounting applications now feature —

**Mechanical Seals
O-Ring Gaskets
Non-Lubricated Bearings
New Safety Relief Valves**

Install these pumps and forget them. No service of any kind required. Available in 8, 17, 28, 38, 70 and 90 GPM sizes in complete range of mountings.



**O-RING GASKETS
ASSURE
NON-LEAK OPERATION**



**CARBON GRAPHITE
BEARINGS — NO
LUBRICATION OF ANY
KIND NEEDED ON PUMP**



Send for new bulletin 2305-B today. Also ask for bulletin A2300B covering the special tractor and motor vehicle filling unit GG-196.



VIKING PUMP COMPANY
Cedar Falls, Iowa



Fred S. Victor



R. E. Haugen

NATIONAL STEEL CONSTRUCTION CO.—Wayne R. Smith Jr., formerly with Continental Water Heater Co. of Los Angeles, has joined National Steel as sales manager.

CENTURY ENGINEERING CORP.—This company, of Cedar Rapids, Iowa, has appointed M. M. MacKinnon as district sales manager for the New England territory. Century manufactures a complete line of automatic gas heating equipment.

Mr. MacKinnon, whose home is in Lebanon, N. H., will travel the New England territory, calling on distributors and dealers, and supervising Century sales activity in the area.

SKUTTLE MANUFACTURING CO.—William Davis, Rochester, N. Y., has been appointed factory representative in northern New York state for Skuttle Manufacturing Co., Milford, Mich., according to Carl J. Theobald, general sales manager.

Mr. Davis is a widely known manufacturers' representative with long experience in the territory.

H. L. McNally, Des Moines, Iowa, has been appointed Skuttle representative in Iowa. Mr. McNally was formerly

PREST-O-LITE

TRADE-MARK

LP-Gas CYLINDERS

are built to
make money
for you . . .



*Available in popular 20-lb., 40-lb., 60-lb.
and 100-lb. sizes, with or without valves.
Other styles can be made to order.*

PREST-O-LITE Cylinders combine unsurpassed quality, low cost, and attractive appearance to satisfy the exact needs of LP-Gas users everywhere. Cylinders are rugged and sturdy for long, dependable service life. They're lightweight for easier handling. Factory testing is in excess of requirements to assure maxi-

mum safety and performance. And all PREST-O-LITE Cylinders are deep-drawn to extremely uniform wall thickness so you can be sure of exacting size, weight and capacity. Superior anti-rust coating protects the cylinder bottom and interior of footing from corrosion—a valuable safeguard at no extra cost! Durable aluminum enamel protects the cylinder finish indefinitely and reduces your repainting costs.

Your wisest, most economical investment in LP-Gas cylinders is in the PREST-O-LITE Brand. Write or 'phone your nearest LINDE Office today for complete information.

Data is deeply cut in large characters into an extra thick, wide flange on 60-lb. and 100-lb. cylinders (into valve protecting head ring of 20-lb. and 40-lb. sizes). Lettering remains easy to read throughout life of the cylinder.



LINDE AIR PRODUCTS COMPANY

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street **UIC** New York 17, N. Y.

Offices in Other Principal Cities

In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto

*"Prest-O-Lite" and "Linde" are registered trade-marks of
Union Carbide and Carbon Corporation.*



merly vice president of Delavan Manufacturing Co. in Des Moines.

Both men will handle the Skuttle complete line of automatic humidifiers for warm air heaters.

MINNEAPOLIS - HONEYWELL REGULATOR CO.—Robert A. Lawder was recently re-elected president of the New York sales managers club.

Mr. Lawder, who has been with Honeywell since 1944, is sales manager of the apartment house sales division for the firm. Formerly vice president of the 38-year-old sales club, he was elected president for the first time last May.

WARREN PETROLEUM CORP.—W. K. Warren, chairman, and James E. Allison, president, of Warren Petroleum Corp., announce the election of assistant vice presidents for its manufacturing, natural gasoline sales, and liquefied petroleum gas divisions.

Those elected to the newly created positions are C. E. Wharton, as assistant to H. W. Harts, vice president in charge of manufacturing; J. M. Reidy, as assistant to S. I. Hulse, vice president in charge of natural gasoline sales; and F. S. Schwend, as assistant to G. L. Brennan, vice president of the liquefied petroleum gas division.

PHILLIPS & BUTTORFF MANUFACTURING CO.—D. W. Binns,



L. L. Peters

president of Phillips & Buttorff Manufacturing Co., Nashville, Tenn., manufacturers of the "Enterprise" and "Crusader" lines of gas cooking and heating appliances, announces that L. L. "Pete" Peters

has been appointed vice president in charge of marketing. In this position Mr. Peters will be responsible for all sales and marketing activities.

Mr. Peters has been with Magic Chef for 14 years. He joined them in 1940 as a district representative. He became director of L. P. gas sales in 1951 and general sales manager in November, 1952.

A-P CONTROLS CORP.—Appointment of Del Moerick as vice president, sales, and A. L. Topp as vice president, engineering, is announced by R. W. Johnson, president, A-P Controls Corp., Milwaukee.

In 1937 Mr. Moerick joined A-P, then known as Automatic Products Co., as a sales correspondent and became general sales manager in 1953.

Mr. Topp, who came to the company in 1939 to head the refrigeration development laboratory, was named director of engineering over oil, gas and refrigeration in 1952.

ROBERTSHAW-FULTON CONTROLS CO.—The appointment of Herbert Boshea as purchasing agent for the Bridgeport Thermostat division was announced recently by A. D. Rapuano, vice president and general manager.

SID RICHARDSON GASOLINE CO.—The appointment of Don Frank as manager of its Omaha, Neb., division is announced by the Sid Richardson Gasoline Co., of Fort Worth, Texas. Mr. Frank replaces Dale Shelton, who recently resigned.



Don Frank

Mr. Frank was formerly with the Skelgas division of the Skelly Oil Co. for a number of years, and recently owned and operated his own appliance stores in Lincoln, Neb. His address in Omaha will be 6602 N. 31st Ave.

WE SAVE YOU MONEY!

One Good Reason for Buying
The World's Finest
Propane Delivery Units from
WHITE RIVER DISTRIBUTORS

MODEL 100
New 1954 Chevrolet 2-ton (Model 6403) 2-speed axle, with 1400 W.G. twin propane tank, piped complete—\$3,845.00. With 1954 International L.P.G. factory equipped—\$4,095.00.

PACKAGED TRUCK TANK UNITS

Prices include tank, piped complete, Viking KK-190 mechanical seal pump, 50' 3/4" filler hose, clearance lights, tank painted, ready to use.

MODEL 200

MODEL 100
1400 W.G. 1600 W.G. 1800 W.G.
\$1755.00 \$1845.00 \$1960.00
Add \$150.00 for Model 200
Add \$250.00 for Model 300

MODEL 300

Pay Only 25% Down!
...the balance in 18 mos. at 5% interest!

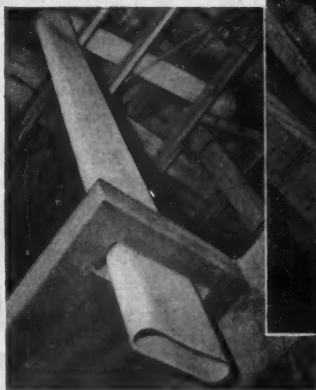
We sell the steak...not the sizzle!
Our Truck Tanks are built for us by Nor-Tex to our rigid specifications.

Call Preston W. Grace
Phone 570 or 686

WHITE RIVER DISTRIBUTORS, INC.
BATESVILLE, ARKANSAS

From every angle ...

Transite® makes quick work of gas-venting problems



Only the adaptable Transite Line of Gas Vent Pipe and Fittings offers you All these advantages:

1. Continuously UL-listed since 1932 as an approved "Type B" vent for domestic gas appliances

5. Easy to carry and install

2. Wide range of round and oval pipe, fittings and adaptors

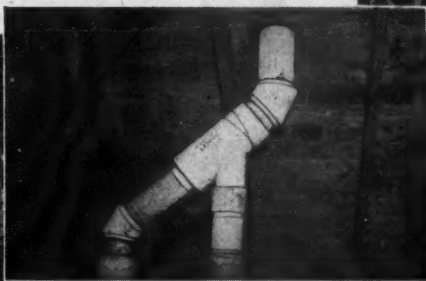
6. Uniform strength permits clamping anywhere along barrel without denting

3. Available in 5-and 10-foot lengths to simplify handling and speed up assembly

7. Special fittings may be made to order to solve unusual problems

4. Pipe and fittings of strong, tough asbestos-cement—need not be "babied" during installation

For further information, write to Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay Street, Toronto 1, Ontario.



Also Transite Type B-W Gas Vent. Developed by Johns-Manville for the improved venting of recessed wall heaters, Transite Type B-W Gas Vent is an asbestos cement product, aluminum-jacketed and specially designed for simplified installation. UL-listed.



Johns-Manville TRANSITE GAS VENT PIPE

AMERICAN PIPE & STEEL CORP.

—Ed Bickly has been appointed to head the LPG and anhydrous ammonia equipment division of American Pipe & Steel, according to a recent announcement by Carl Dahlberg, vice president in charge of sales.

Mr. Bickly's appointment inaugurates a program of increasing



Ed Bickly

activity in the fields of L. P. gas and anhydrous ammonia for American Pipe.

Mr. Bickly brings to American Pipe 10 years of experience as an engineering sales executive in the LPG equipment field with Butler Manufacturing Co., Kansas City, and North Texas Tank Co., Denton, Texas.

NORGE DIVISION, BORG-WARNER CORP.—Appointment of Harold Bull to the new position of director of distribution is announced by R. C. Connell, director of sales.

GENERAL WATER HEATER CORP.

—Dick Hinckley, for 20 years associated with General Water Heater Corp. as vice president and general sales manager, has resigned that position. Succeeding Mr. Hinckley will be J. R. Van Curen, General's southern California sales manager.



Dick Hinckley

ager.

Mr. Hinckley started with General as a salesman, advanced to vice president and sales manager, and during his administration General developed into one of the major manufacturing concerns in the water heater industry, with distribution throughout the United States. Mr. Hinckley also is noted for his active work with the Gas Appliance Manufacturers' Association, the Pacific Coast Gas Association, and other important trade organizations.

Carl L. Herrmann

Carl L. Herrmann, 52, president of the Pittsburg Water Heater Sales Co., Los Angeles, died recently. He had been ill for some time with a heart condition.

Walter H. Miller

Walter H. Miller, long identified with the liquefied petroleum gas industry, passed away in June. He was on a field trip to Minnesota at the time, and the cause of death was heart failure.



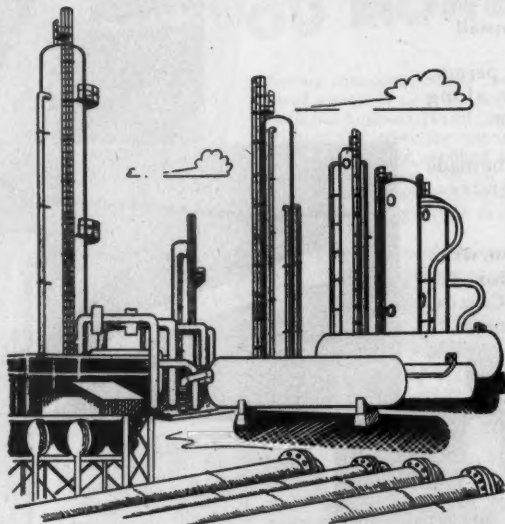
Walter H. Miller

Walter Miller has been president of the Dri-Gas Co. of Chicago since the retirement of B. D. Geroy several years ago. Dri-Gas has been a Warren Petroleum Corp. subsidiary since 1949, with retail outlets through the north central states. Formerly the company was known as the Illinois Bottled Gas Co. Prior to joining Illinois Bottled Gas, Mr. Miller was with the Chicago Bridge & Iron Works.

In recent years Mr. Miller has been prominent in the activities of the Liquefied Petroleum Gas Association, having served as treasurer for several years.

CITIES SERVICE

LIQUEFIED PETROLEUM GAS



... in L. P. gas also Cities Service means Good Service

- A DEPENDABLE SOURCE
- UNIFORM PRODUCTS
- A CAPABLE SUPPLIER
- TWENTY-FIVE YEARS EXPERIENCE

CITIES SERVICE OIL CO.

DELAWARE

Bartlesville, Okla.

Chicago, Illinois

OTHER SALES OFFICES

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NEW Peerless



The New

STANDARD OF EXCELLENCE

IN  Gas

UNIT HEATERS

A new concept in Unit Heaters—*new* inside and out. Stimulating styling that sells... plus more engineering achievements that surpass all others. Efficiency and rugged construction for the toughest heating task.

Top flight quality to suit even the most conservative buyer has established the name — Peerless — that has been counted on for dependability for 70 years.

**Styled for Beauty
Built for Duty**



FAN AND
BLOWER TYPES

FIVE SIZES

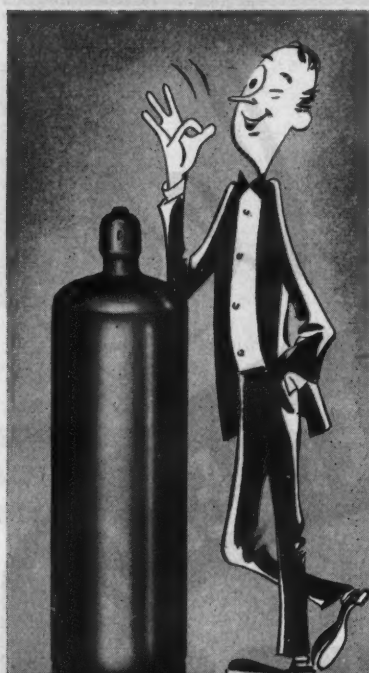
IN EACH TYPE

60,000 BTU — 80,000 BTU

100,000 BTU — 150,000 BTU & 200,000 BTU

SEE YOUR DISTRIBUTOR
TODAY OR WRITE US

PEERLESS MANUFACTURING CORP., — LOUISVILLE 10, KENTUCKY




One of the Best
Investments My
Boss Has Made

Let me tell you—These Harrisburg Lite-Weight LPG Cylinders can take plenty of punishment. They are tough. Talk about safety, they are the most dependable I've ever seen. The facts are that Harrisburg Lite-Weight Cylinders are built to I.C.C. Specification 4BA-240 and tested to 480 p.s.i. That's not all—Harrisburg puts each cylinder through their own rigid strength and uniformity tests. No wonder more and more L.P. gas dealers and bulk plant operators use Harrisburg Lite-Weight Cylinders.

WRITE TODAY FOR OUR
CATALOG AND PRICES

MSC-1P. 3/54

101 YEARS IN  PENNSYLVANIA'S CAPITAL

Harrisburg Steel
CORPORATION

HARRISBURG 4, PENNSYLVANIA

124

Butane-Propane News

Sinclair Opens Large LPG Underground Storage

Sinclair Oil and Gas Co. held open house recently at the location of its new 5-million-gallon, hard rock, underground storage for liquefied petroleum gases. The storage is located five miles southeast of Seminole, Okla.

Among Sinclair hosts for the occasion were L. G. Rheinberger, vice president, gas and gas products department; V. C. Bash, treasurer; A. T. Scherer, director, and John Storm, sales manager of the L. P. gas sales department.

More than 100 guests inspected the premises above ground and then stepped aboard an iron cage, three or four at a time, to descend 308 ft below to see what the underground cavern looked like. The descent was through a shaft, made from lengths of 42-in. pipe welded together.

At the bottom of the shaft construction engineers, wearing miners' lamps, helped guests from the cage. Groups were escorted down the dimly lighted tunnels, extending in two directions from the shaft. There are 2400 ft of tunnel—28 ft deep and approximately 15 ft wide.

Some 132,000 barrel-size buckets of rock shale were removed from the cavern to provide for the 5 million gallons of storage. This was spread out approximately 18 ft deep over a wide area of low land surrounding the derrick.

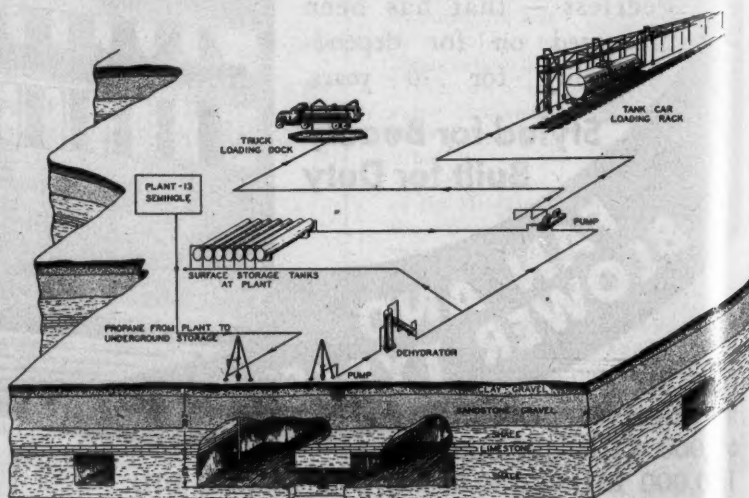


A group of visitors, wearing helmets for protection against small pieces of falling shale, view the interior of Sinclair's new 5 million gallon L. P. gas underground storage near Seminole, Okla.

Propane to fill the huge storage will be supplied from Sinclair's plant No. 13, located several miles from the project. Raw LPG is produced at this plant, which also fractionates raw LPG products from two other Sinclair plants in the area.

After all of the necessary equipment is in place, the reservoir will be tested with air at 150 lb pressure, prior to making actual transfer of products.

Pressure in the underground storage reservoir will be maintained at 90 to 100 lb, which will keep the propane in liquid form. An electrical liquid level gauge device has been developed to determine the level of product in the storage reservoir.



Drawing of new LPG underground storage opened by Sinclair near Seminole, Okla.

BUTANE-PROPANE News

CHARLOTTE

Engineered*

Truck Tanks for LP Gas

* **FOR**

Maximum Safety
Economical Operation
Rugged Service

Since 1948 Dade Gas Corp., Miami, Florida, has used Charlotte Truck Tanks exclusively. As business expanded, more and more Charlotte Tanks have been added to the Dade fleet.



GUARANTEED

to be in safe operating condition when the tanks leave our plant. Designed to give complete customer satisfaction.

CERTIFIED

to meet exacting requirements of ASME Code and ICC Specification MC-330. Charlotte Truck Tanks are load-balanced to the chassis.

Write today for full information and prices on our line of Engineered Truck Tanks, D-Hydrated LP Gas Systems, ASME Cylinders, Duo-Tested Anhydrous Ammonia Tanks.

Charlotte Engineered Truck Tanks are furnished to fit your present truck or on a new chassis of your choice.

All wiring is sparkproof — all excess flow check and hand valves are of the highest quality.

And, in addition, twenty-nine quality construction features assure you of maximum safety, economical operation and many years of rugged service.

Charlotte Engineered Truck Tanks are available in 1248 to 2400 gallon water capacities.



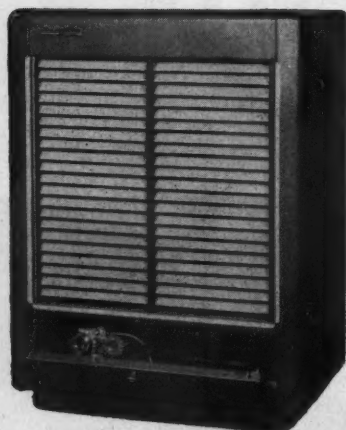
CHARLOTTE TANK CORPORATION

Post Office Box 8037

CHARLOTTE 8, NORTH CAROLINA

AUGUST, 1954

125



COOL CABINET CIRCULATOR

MODEL NO. 5000 has Fiberglas-insulated cabinet to safeguard baby hands, centralize heat for fan-delivery. Fully automatic . . . safety pilot, thermostatic room-temperature and fan control. Filter, humidifier, draft diverter and summer-switch built in. 100% welded radiator prevents odor, sweating. Efficiency burner gives balanced flame, is non-clog. Cast iron combustion head insures long life. Giant fan provides even, gentle, penetrating heat flow, minus torrid gusts to living zone or cold blasts during warmup. Is quiet, vibrationless. Plumb-Ease chassis drastically cuts installation time. Rated 50,000 btu. Beige and Ivory baked finish, gold-bronze trim. A.G.A. approved for all gases, high altitudes.

FOR FRANCHISE DETAILS,
LITERATURE AND PRICES,
WRITE TODAY

**THE OHIO FOUNDRY
& MANUFACTURING CO.**
"Quality Heating Since 1846"
STEBENVILLE, OHIO



Looking down shaft at Sinclair underground storage reservoir prior to descent are, left to right: K. C. Jeffries, Oklahoma Butane Gas Co., Miami, Okla.; A. T. Scherer and John Storm, Sinclair.

Propane will be removed from underground storage with two deep well type centrifugal pumps driven by electric motors. Each pump is designed to handle 12,000 gal. per hour. They discharge into the surge tank, which is to be equalized with the storage reservoir pressure.

To withdraw propane from underground storage, the plant operator opens a valve on the transfer line at the plant, into a dehydrator unit. Reduction in pressure causes the vertical transfer pumps at the underground storage site to be automatically started. The transfer pump delivers the product from the surge tank back through 6-in. transfer line and through a dry desiccant type dehydration unit located at the plant. From the dehydrator, the dry propane goes directly to tank car loading rack or into storage tanks, from which tank trucks can be loaded. The storage can be emptied in approximately 35 days.

Fenix and Scisson were contractors for Sinclair on the underground storage project.

Du Mont Expands Communications

Allen B. Du Mont Laboratories Inc. has expanded into the field of mobile communications radio equipment manufacture, according to an announcement by Dr. Allen B. Du Mont, president of the Clifton, N. J., company. Dr. Du Mont revealed the formation of a new communication products division, which is now developing, manufacturing and marketing mobile radio transmitter and receiver equipment.

The new division comprises two major operating units, the television transmitter department and the mobile communications department.

Herbert E. Taylor Jr., who was manager of the former transmitter division, has been named to head the overall activities of the new communication products division.

Mr. Taylor has announced the appointment of Fred M. Link as director of operations for the newly formed mobile communications department. Mr. Link, former president of Link Radio Corp., will supervise market development and distribution of Du Mont mobile and fixed-station radio transmitter and receiver equipment in all major markets.

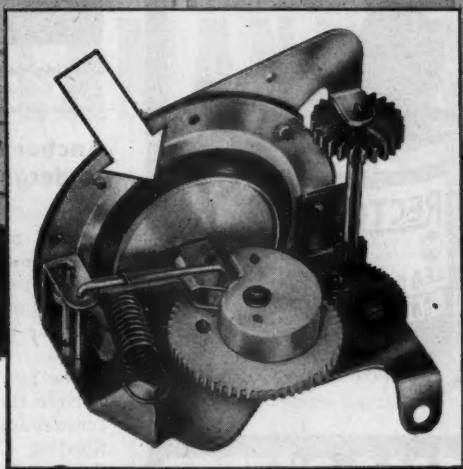
The first two-way mobile radio equipment is now being manufactured and marketed. This first complete system is for operation in the 24-54 mc band. Field operating requirements of the petroleum industry, and other industries using two-way radio, have been carefully considered in the initial design of the communications equipment.

Another new unit, designed for operation in the ultra-high-frequency 450-470 mc band, has been announced. A mobile system for the 147-174 mc band is presently under development.

C. J. Harrison, who has been appointed sales manager of the mobile communications department, has organized a national sales operation. Chester F. Faison, who has been appointed southwestern sales supervisor, will be responsible for the sale of the full line of mobile and fixed-station radio communication equipment. Walter J. Roche, a veteran of forty years in the radio communications industry, has joined Du Mont Laboratories as Eastern Seaboard sales supervisor.



Three outdoor stoves using butane have been installed for public use in Blue Rock Springs Park in Vallejo, Calif. A dime inserted in a slot gives enough gas to burn for one-half hour.



*Less meter-reading time...
better public relations*

Rugged diaphragms of Du Pont "Fairprene" permit outside reading of indoor gas meters

TEFLON®

Tetrafluoroethylene resin coated glass fabrics

These materials, designed primarily for the electrical industries, have found many applications in other fields because of their unique combination of properties. Diaphragms, gaskets, conveyor belts, fuel cells, and non-sticking covers for heating elements on packaging equipment are only a few of the other uses to which they have been put.

Their extraordinary properties include:

Flexibility at -100°F., continuous use at +500°F., essentially complete chemical resistance, self-lubrication, and exceptional anti-adhesive or non-sticking ability.

For further information on the properties and uses of these unique materials clip and mail the coupon below.

Providing diaphragms for a device that repeats the exact position of the hands of the gas-meter index, but at an outside location, calls for a material with exceptional durability and sensitivity to temperature fluctuations.

Recently the Sangamo Electric Company, Springfield, Ill., found that diaphragms made of Du Pont "Fairprene" coated nylon fabric met with their requirements in the development of their Telemeter. "Fairprene" had greater diaphragm flexibility and showed positive resistance to loss of coating when subjected to the aromatic solvents encountered in manufactured gas. Constant flexing action did not bring about a breakdown of fatigue of the elastomer.

They also found in factory testing the meter device that the outside dial would accurately record at any temperature

from -40 to 180 degrees (F.). Distance between the meter and the outside receiver can vary from a close connection to a distance of 125 feet because of "Fairprene" sensitivity.

"Fairprene" is preferred in many kinds of diaphragms and in hundreds of other industrial uses. "Fairprene" is tough, lightweight and extremely durable. It has a low permanent set or drift and resists aging in oxygen as well as gasoline, grease and kerosene.

Du Pont engineers will gladly work with you to evaluate "Fairprene" for designing new products, or for improving your present products and manufacturing methods. They'll work with you in engineering special grades of "Fairprene" to meet your specific needs. For prompt assistance, fill out and mail the coupon below.

DU PONT FAIRPRENE®

synthetic elastic compositions

"ENGINEERED TO DO YOUR JOB BETTER"



REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

"FAIRPRENE" is Du Pont's registered trade-mark for its line of products made from synthetic elastomers available in the form of coated fabrics, sheet stocks without fabric insert and adhesives.

E. I. du Pont de Nemours & Co. (Inc.)

Fabrics Division,
Empire State Building, New York 1, N. Y.

- ☐ Please send me booklet "'FAIRPRENE' synthetic elastic compositions."
☐ Please send me Technical Bulletin "'TEFLON' Coated Glass Fabrics!"

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**SEALS BETTER
COSTS LESS**

Compare the quality — Compare the price of Rectorseal #2 with whatever thread compound you are now using, and you'll know why Rectorseal #2 is rapidly becoming the favorite of the industry.

QUALITY

Rectorseal is thin in the can—thickens in the joint. Easier to apply. Never hardens—Insoluble—Smoother—Cleaner—No Waste—Holds odorants—Convenient containers. Rectorseal #2 is the only thread compound having ALL of these qualities.

PRICE

Here's the good news! Rectorseal #2 costs less than any compound insoluble in petroleum or its fractions.

PROOF

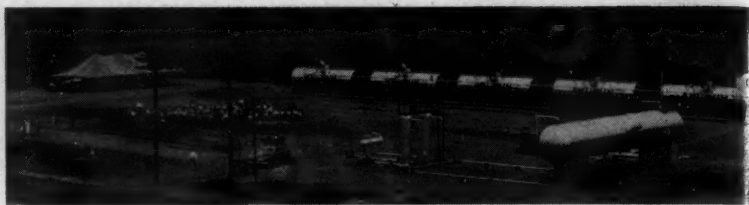
Write for free sample, additional information, and prices on Rectorseal #2.

Your supply house has it or can get it for you.

RECTORSEAL, Dept. "A"
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RECTORSEAL #2

MAKING THE L.P. GAS INDUSTRY SAFER



Opening-day crowd at the site of Anchor Petroleum's new underground storage project. After the opening ceremonies, company officials acted as guides for tours of the area.

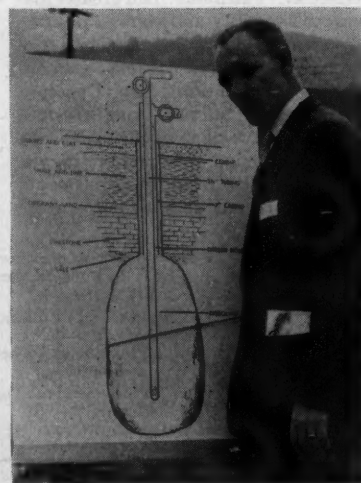
Anchor Petroleum Opens Underground Storage

One of the nation's largest underground propane gas storage plants was opened officially July 1, by Anchor Petroleum Co., marking the beginning of a new service to users of propane in the northeastern United States.

The new installation, located just outside Bath, N. Y., was the site of ceremonies featuring a talk by W. Sterling Cole, representative from the state of New York and chairman of the Atomic Energy Commission, as well as an address of welcome to guests by W. A. Baden, president of Anchor Petroleum, and an address by Mayor Harold Lee of Bath.

This storage of liquefied petroleum gas gives promise of alleviating the shortage of gas during periods of severe winter weather by providing storage close to the consumer and eliminating the long over-land rail shipments during winter months.

S. G. Branyan, chief engineer in charge of all of Anchor's underground storage, explained operation of the unit, and demonstrated the methods of loading and unloading tank cars, pumping gas into the well, and then reversing the process.



S. G. Branyan, chief engineer of Anchor Petroleum Co., explains the new underground storage for liquefied petroleum gas near Bath, N. Y.

Included in the equipment purchased for the plant is a special dehydration unit which removes all moisture from the gas, leaving it completely dry. This equipment is identical to that used in other Anchor underground storage plants at Hattiesburg, Miss., and Midland, Tex.

Guests at the opening included many leading propane and butane dealers, as well as a number of out-of-town visitors. Following the opening ceremonies and the demonstrations, a buffet-style luncheon was served. Following the luncheon, special tours were arranged for those attending, with company officials acting as guides.

Attending from Anchor's Tulsa headquarters were W. A. Baden, president; B. B. Blair, E. S. Carley and Fred Shellhorn, vice presidents; O. L. Williams, transportation superintendent; O. L. Ely, sales representative, and S. G. Branyan, chief engineer.

Also assisting as hosts were Nick Biebel, Toledo, Ohio, and C. E. Hart, Westfield, Mass., Anchor representatives in the eastern area.

O. L. Rush is superintendent of the new plant, and P. E. Gray is resident engineer.

Anchor Opens Oklahoma City Office

Anchor Petroleum Co., Tulsa, has opened a new sales office in Oklahoma City. W. A. Baden, president of Anchor, has announced.

C. H. (Swanny) Swanson, formerly of the Tulsa office, is in charge of the new Anchor office. The address, Mr. Baden said, is 111 N.W. 23rd, Oklahoma City.

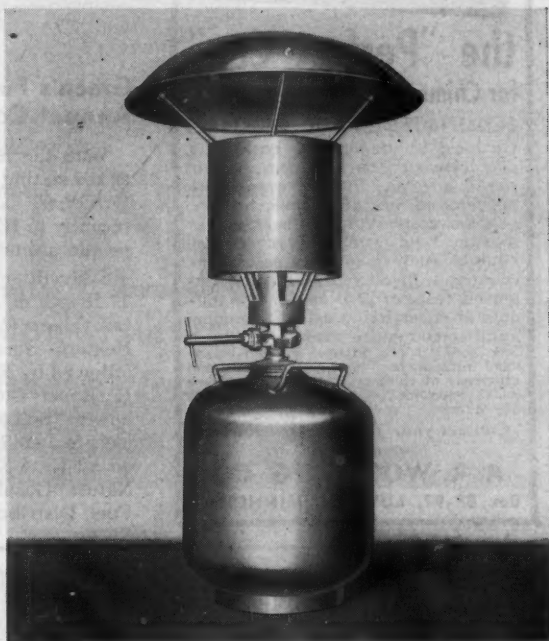
Sorby, Lund Promoted By National Council

E. Carl Sorby, vice president, George D. Roper Corp., Rockford, Ill., and William R. Lund, manager, marketing research, Warren Petroleum Corp., Tulsa, have been named to important committee posts by the National Council for LP-Gas Promotion. James E. Pew, president, announced recently.

The **NEW** Weldit L-P Portable HEATERAMA SALAMANDERS



NO. 800 Weldit Salamander, Floor type model. Height 22", Width 19", Weight 13 lbs. Operates off any Standard L-P Tank.



NO. 850 Weldit Salamander Tank Top Model. Height 20", Width 19", Weight 14 lbs. Operates off any L-P Tank equipped with Tank Top Valve.

New design, new efficiency and new economy is yours now with the Weldit L-P Heaterama Salamander.

This Weldit Heater is the end result of over two years experimental work by Weldit Engineers. It is designed to give maximum high heat output at low cost, requires no priming or pumping, positive control, no smoke or soot, generates heat fast, portable, rugged construction assures long life, fabricated of steel and cast iron. Priced right.

Write for free folder today.

Weldit
INC.
SINCE 1918



Free!

**990 OAKMAN BOULEVARD,
DETROIT 38, MICHIGAN**

WELDIT, INC., 990 Oakman Blvd., Detroit 38, Michigan
Gentlemen: Please mail me your new folder on the new Weldit Heaterama Salamanders and your L-P Equipment.

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AUGUST, 1954



the "Perfect Cap" for Chimneys, Flues, Ventilators ELIMINATES DRAFT TROUBLES

Caused by downdrafts, backdrafts, pilot blowouts, condensation. Acts as spark arrester. Creates even stack temperature. Improves combustion and cuts fuel costs. Will not freeze shut or soot up. Field tested four years in all kinds of weather, in every part of the country, with all types of units. Improved features give long life. Available in galvanized steel or aluminum in all popular stack sizes. Sell DRAFT KING on new and old equipment installations. Improves appearance and efficiency of chimneys or ventilators. Eliminates need for tall flues and dangerous guy wires.

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Box BP-97, LUVERNE, MINNESOTA

Mr. Sorby, who formerly headed the copy committee, has become chairman of a newly instituted public relations committee. Mr. Lund, a member of the copy committee since 1952, succeeds Mr. Sorby as its chairman.

Formation of an advisory committee to the council's executive committee has also been announced. This group consists of the immediate past president of the organization and the top staff executives of the three sponsoring associations: GAMA, LPGA and NGAA.

Green's Fuel Holds Annual Convention

With the Hotel Nacional de Cuba as the setting, Green's Fuel Distributors' three-day convention was held recently in Havana, Cuba. About 120 people attended the convention.

Convention goers heard William T. Briggs of John Wood Co. give a talk about "Automatic Gas Water Heaters—Servants On Tap." He was followed by E. Carl Sorby of George D. Roper Corp. giving pointers on how to "Sell More in '54." Other subjects included L. P. gas storage treated by Neal E. Van Fossen of Texas Natural Gasoline Corp., and Green's Fuel Distributors' program for the

future, discussed by John T. Oxley of Texas Natural.

Entertainment included an all day city and country trip with lunch at a Cuban farm, sightseeing and shopping, and a night trip to the Tropicana night club in Havana.

Safety Program Receives National Recognition

The BUTANE-PROPANE News safety program, which has been a monthly feature of the magazine since Feb., 1953, received the highest national recognition on June 21, through the presentation of the 1953 Public Interest Award by the National Safety Council.

This non-competitive award is accorded to publications and public



Presentation of National Safety Council Public Interest Award to Butane-Propane News. Left to right, L. W. Van Aken, president, Greater Los Angeles Chapter of National Safety Council; Editor Carl Abell; Earl Campbell, western regional representative, National Safety Council.

service groups which, in the opinion of the committee of awards, have during the past year rendered exceptional service to safety. Out of more than 2000 industry magazines published in the United States, only 27 were considered eligible for this recognition.

The presentation was made through the Greater Los Angeles Chapter of the National Safety Council, at a special meeting in honor of the various publications, broadcasting organizations, and municipal, county and state departments which were included in the list of NSC awards for 1953.

Thomas to Confine Efforts to L. P. gas

H. Emerson Thomas has announced that he has resigned as president of Pennsylvania and Southern Gas Co. and its subsidiaries. He will remain a director of the companies and will serve in a consulting capacity.



Get EVER-TITE quality in heavy-duty quick coupling units

All of the advantages of Standard Ever-tite Couplings — precision engineering, quality materials, superior performance — are embodied in heavy-duty Ever-tite units, with the additional feature of heavier construction throughout.

Test them now — under any conditions. They'll prove that if you want tough, heavy-duty couplings that function right, it pays to use Ever-tite.

EVER-TITE COUPLING CO. INC.
254 West 54th Street, New York 19, N. Y.

COLUMBIAN Full-Skirted Delivery Trucks

Backed by 60 years' tank-building experience. Pump mounted with direct-driven power take-off. Engineered to your state regulations. Built for speedy transfer. Pictured is 1600-gallon custom made unit. Curbside or rear-mounted controls.



COLUMBIAN L-P

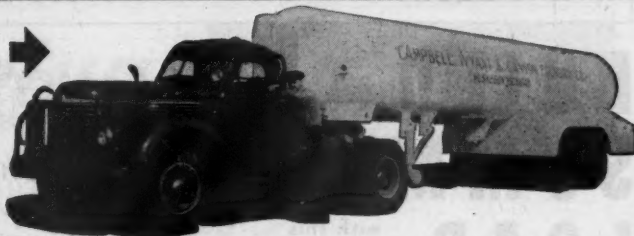
Delivery Trucks • Semi-Trailers

Storage Tanks • Domestic Systems

Anhydrous Ammonia Tanks

COLUMBIAN Custom Built Semi-Trailer

To your order, single barrel or double. Greatest strength with lightest weight for a payload that PAYS! 4725-gallon single barrel transport, right.



COLUMBIAN Bulk Storage

Long service life assures you maximum economy. Sizes to meet every need. ASME code construction throughout. Single or multiple installations. At left, dealer tanks up to 6000 gallons capacity.

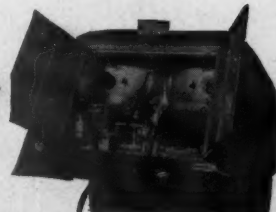


Anhydrous Ammonia

Anhydrous Ammonia tanks up to 6000 water gallons. For application, transportation and storage. Fittings protected by heavy shield. An ever-growing, profitable side line for you!

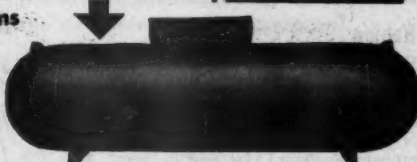
COLUMBIAN Twin-Barrel

For delivery or transport, note the functional location of controls, hose reel, metering equipment. Designed to cut delivery time, increase safety... no waste motions. All sizes to meet your specifications.



COLUMBIAN Domestic Systems

ASME construction, in all sizes. Quality materials and workmanship throughout. Fittings conveniently grouped and protected by sturdy weather cap.

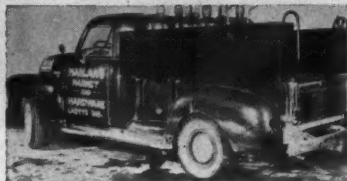


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BRINDLE EQUIPMENT

SAVES TIME, LABOR AND MONEY



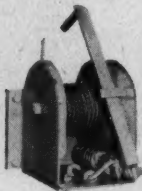
TRUCK TOOL BOXES

Holds Tools, Tube, Parts. Make money by saving miles and time.



TRUCK HAND RAILS

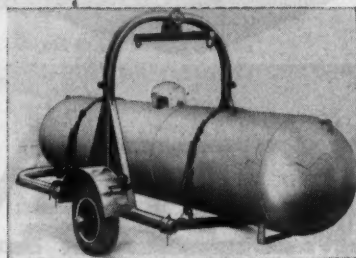
Quickly Attached. Will Out-wear Many Trucks.



— WINCH —

Two-Ton Capacity

Bottom or Side Mounted. Powerful — Long Lasting.



TANK TRAILER

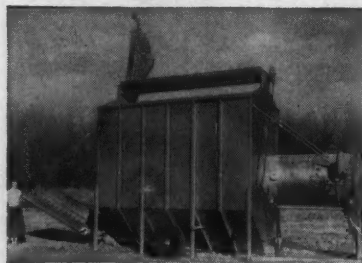
One Man Operated. Saves Labor Costs. Repay Investment in Short Time.

WRITE TODAY FOR SPECIFICATIONS AND PRICES

H & H EQUIPMENT CO. — LAOTTO, INDIANA

BUILD SUMMER LOAD

with this Farm Crop Drier



Behlen Combination Drying Tower & Heat Blower

Sell Behlen Driers yourself or suggest it to your implement dealer friends. You earn the dealer's discount on a \$1,800-\$3,000 sale, and are setting up a big summer user of propane. Unit burns up to 25 gals. of propane an hour. The load is there! And, it actually burns liquid propane without all the additional equipment needed for vaporizing. Dries small grain, shelled corn. Fast drying direct heat. Every farmer, country elevator is a prospect. Write for full information —

BEHLEN MFG. CO., Dept. BP, Columbus, Nebr.

*Note to adv dept.
Write adv for B-P NEWS
on our ROSKOTE
FOOTRING MASTIC
Tell how Red Primer
#4452A inhibits rust-
and about the tough
moisture barrier ROSKOTE
provides - with long life
added to L.P. gas cylinders,
as proven by inspection of
cylinders coated 3 yrs. ago.
Don't forget to offer samples.
(We need distributors, too)
J.H.R.*

**ROYSTON LABORATORIES, INC.
Box 112-B, BLAWNOX, PA.**

Mr. Thomas stated that his giving up the active management of Pennsylvania and Southern was tied into his overall program to eliminate the too heavy schedule he has had for years. His sale of his New England L. P. gas properties played a major part in this program.

Mr. Thomas will continue his activities in the L. P. gas business through his connections with H. Emerson Thomas and Associates Inc., and his numerous LPG distribution companies. He will also continue his L. P. gas consulting work.

He has been one of the pioneers in the LPG industry and recently received the Liquefied Petroleum Gas Association distinguished service award and the Seley medal at the annual meeting of the association.

Caloric Stove Expands Midwest Office, Warehouse

Caloric Stove Corp. has announced plans to expand its office and warehousing facilities in the Midwest. Mr. Dwight Sutherin, Midwest division sales manager for Caloric, will relocate in Kansas City, Mo., where he will establish facilities to serve a 10-state area.



Dwight Sutherin

Mr. Sutherin is widely known in the gas industry, having served on many American Gas Association committees. Formerly sales engineer for Minneapolis-Honeywell Regulator Co., Mr. Sutherin was transferred to Chicago to head the company's air conditioning division. He resigned in 1941 to accept his present position of territorial sales manager with Caloric in Chicago.

GAMA Reports Recent Appliance Shipments

Gas Appliance Manufacturers Association reports the following recent shipments of gas appliances.

Water heaters: 200,300 units were shipped during May, an 11.9% increase over shipments during May, 1953. Total shipment for the year is 928,300.

Ranges: 798,400 units were shipped during May, 149,600 being domestic ranges. Domestic ranges were 17.3% below shipments during 1953.

Central house heating equipment: 75,400 units were shipped during May. This is a 30% increase over the same month of last year.

NOW! MORE AND FASTER DELIVERIES at LOWER COST!

New and faster methods of material handling in loading and unloading trucks have offset the rising costs of delivering merchandise of every description. Now Anthony Lift Gates reduce costs still further by: lighter weight—to permit more payload per trip—more payloads per day; by using only ONE cylinder and ONE control lever for ALL operations—greatly simplifies and cuts manual time per delivery—74% fewer operating parts minimizes maintenance.

10 important reasons why Anthony Lift Gates can cut your delivery costs up to 50% are explained in New Brochure just off the press. Send for your copy today.



One Cylinder alone does all operations — opens, closes — lifts and lowers gate.

ANTHONY The Power to lower delivery costs.

LIFT® GATES

In sizes up to 4000 lbs. for all trucks and semi-trailers



Patd. & Pats. Pend.
U.S. and Foreign

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NO. 2

PLUMBERS FURNACE

Mutual

YOUR FIRST CHOICE

MOST EFFICIENT AND VERSATILE LP-GAS FURNACE BUILT

Light a match and—POOF—you're in business. Demonstrate this furnace to plumbers and maintenance men and you've made a sale.

This Mutual furnace employs the principle of the venturi to assure perfect combustion; uses less gas and more air. Produces a hotter flame and does the job faster. Will melt 60 pounds of lead in 12 minutes. No smoke, no priming or pumping.

This unit is well balanced, will not tip over, and is extremely rugged to withstand severe abuse. The No. 2 Furnace fits Mutual 12 and 20 pound ICC cylinders. The No. 2-A bench model may be used with any Propane cylinder. The No. 2 and No. 2-A Furnaces include non-warping head, adjustable orifice and tube, and removable handle and shield. Simplicity of design, having only three main parts, makes the Mutual No. 2 and No. 2-A furnaces dependable and fool-proof.

Like all Mutual products its design reflects years of engineering "know-how". A demonstration will win a new customer.

Send today for free catalog on Mutual's complete line.

Member L.P.G.A.



NO. 2A BENCH
TYPE FURNACE

Mutual



LIQUID GAS EQUIPMENT CO., INC.

3638 WEST IMPERIAL HIGHWAY

INGLEWOOD, CALIFORNIA

If you are tired
of watching
sales go elsewhere,

sell the complete line of

Martin

GAS HEATERS

8 Fully Vented Heaters
15,000 BTU to 85,000 BTU
23 Unvented Heaters
10,000 BTU to 50,000 BTU
All Martin Heaters are
AGA approved for
natural, liquefied, and
manufactured gases.

Write your jobber or direct for NEW catalog.

MARTIN STAMPING & STOVE CO., Huntsville, Ala.






Over
49 years stove
experience




To take advantage of the traffic at the entrance of the installment loan branch, Citizens National and Southern National Branch, Atlanta, Ga., in cooperation with Caloric Stove Corp. set up a display featuring Caloric's built-in gas ranges. Caloric called attention to the fact that the equipment could be financed through the bank's installment loan department.

Olin, Mathieson to Form New Corporation

Olin Industries Inc. and Mathieson Chemical Corp. will merge to form a new corporation, Olin Mathieson Chemical Corp., it was announced recently by John M. Olin, president of Olin Industries, and Thomas S. Nichols, president and chairman of Mathieson. Present plans for the new company do not include any changes in basic operations.

After the merger, Mr. Olin will become chairman of the board of the company, while Mr. Nichols will become president. John W. Hanes, financial vice president of Olin, will become chairman of the finance committee of the new corporation.

Olin Mathieson products will include, among other things, industrial and agricultural chemicals, petrochemicals, fabricated metal parts and tools.

Pan American Holds LPG Training Course

Five separate two-day LPG training meetings were held throughout Kansas during July by Pan American Casualty Co. The meetings were attended by L. P. gas dealers, police, firemen, and highway patrolmen.

The meetings covered such subjects as sources and characteristics of L. P. gas, carburetion, pumps and meters, customer and employee rela-

Natural Gas Standby



A typical Draketown Propane Plant for augmentation and standby

Whether your load is large or small, you will find a Draketown design to meet your specific requirements. Ready at the turn of a valve—completely automatic if you wish—accurate and dependable—your Draketown Plant keeps that pressure up when things get rough.



"Good Gas Insurance"

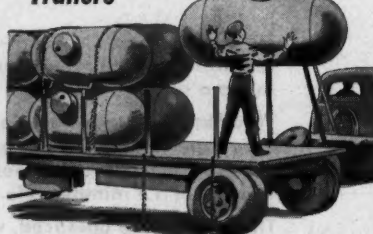
If you have a gas problem, we can help you. We operate from coast to coast and overseas. Phone or write today—no obligation!

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Consulting • Design • Engineering • Construction
11 WEST 42ND STREET • NEW YORK 36, N. Y.

NOW—PROMPT DELIVERY OF BURNHAM PROPANE SYSTEMS

In Burnham Trailers



This quicker, more dependable delivery avoids expensive handling at destination. It eliminates the possibility of transit delays or possible damage associated with other type shipments.

The superior quality of Burnham engineered tanks plus the economy of truck deliveries direct from the factory gives you an opportunity to save that's well worth your consideration. Why not take advantage of it?

BURNHAM LPG TANKS

Available for immediate shipment—15 sizes—either top or end mounted in capacities from 250 to 1,000 gallons.



Burnham Corporation

TANK DIVISION • IRVINGTON, NEW YORK

Yes, *White Glass*

is another of

4 reasons why you'll do better by switching to



WATER HOTTER

Automatic Water Heaters for LP Gas



FILM OF FLAME

Single port burner in gas WATER-HOTTER means NO clogging ever. Amazingly fast "pick-up" for PLENTY of hot water always.

White Glass

LINING

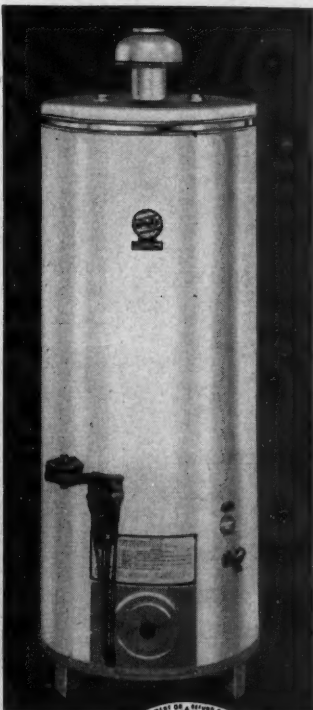
Can't rust . . . EVER! An essential point in many areas—important in all.

NATIONAL ADVERTISING

White WATER-HOTTERS are and have been consistently pre-sold for you in large, color advertisements in leading, consumer magazines over many, many years.

Plus 14 other strong competitive advantages!

Stand a *White Glass* lined WATER-HOTTER alongside any competing make—on your own floor, before your prospect's eyes—and compare them point for point. In every detail you can prove your *White* equal or superior—which means in all, adding up point by point, you and your *White* clinch the sale! That's why more and more dealers every week are switching to *White*. Why wait? Get the facts NOW. Write!



WHITE PRODUCTS CORPORATION

Dept. BP-8, Middletown, Michigan
Export Office: 201 N. Wells St., Chicago 6
Water Heating Specialists Since 1930
AN EDWARD LAMB ENTERPRISE

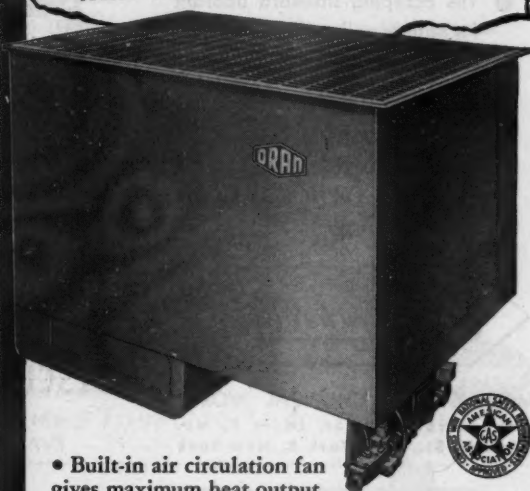
20 gal., 30 gal., 40 gal. and 60 gal.



Oran

presents the new **peak performance**

90,000 BTU input—67,500 BTU output
FULLY AUTOMATIC, SHALLO-WELL, GAS-FIRED FLOOR FURNACE WITH FORCED AIR CIRCULATION



- Built-in air circulation fan gives maximum heat output.
- Exclusive Oran auxiliary cold air returns (optional) increase circulation of heat, even in hard to heat areas.
- 100% safety shut-off valve with 100% automatic operation—all controls completely installed, including automatic fan switch, automatic limit switch, silent operating automatic gas valve with thermostat and transformer.
- Unique, Oran all-steel burner gives clean, hot flame—the result of years of engineering research. Rated at 90,000 BTU input—67,500 BTU output.
- Compact size with beautiful baked enamel outside finish for eye appeal and sales appeal.



Oran also manufactures three other models of Shallo-Well, gas-fired floor furnaces rated at

40,000 BTU input
60,000 BTU input
80,000 BTU input

WRITE US FOR DETAILS ON THE COMPLETE ORAN LINE TODAY!

ORAN COMPANY

2212 SOUTH THIRD ST., COLUMBUS 7, OHIO

Mallinckrodt
ETHYL
MERCAPTAN
purified

it says LOOK OUT

- The accepted standard odorant for natural or liquefied petroleum gas — gives sure but harmless warning.
- Purified — Moisture-free — PROTECTS FIXTURES. Meets all 15 qualifications of National Bureau of Standards.



MALLINCKRODT CHEMICAL WORKS
Mallinckrodt St., St. Louis 7, Mo.
72 Gold St., New York 8, New York

Handy Tube Bender

Smoothly Bends ANY
Pipe or Tubing

3/8" to 1 1/8" O.D.



- Just a twist of the wrist assures perfect, even bends . . . right-angle, any angle, U and offset — every time. Eliminate need for els. No more guesses — no kinks! Save enough time, labor and money on ONE job to pay for your Handy Bender.

See your supply house — or write for free folder today.

HOLSCLAW BROS., INC.

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tions, appliances, installation of pipes and fittings, protection of piping testing installations and fire protection and control.

Ransome Purchases Mountain Rotary

Ransome Co., Emeryville, Calif., has purchased the Mountain Rotary Fuel Co. plant at Truckee, Calif. Ransome now has eight plants in California, according to E. C. McEneaney, general manager of the L. P. gas division.

Rheem Names Southwest Air As Calif. Distributor

Southwest Air Conditioning Supply Co., a newly-formed organization headquartered in Beverly Hills, Calif., has been named a California distributor for Rheem Manufacturing Co.'s heating and air-conditioning line and built-in appliances, it was announced by Albert J. Wild, president. Mr. Wild and Don Piper, executive vice president and general manager, are the organizers of the new company.

Suburban Propane Acquires Natural Gas, Fuelite

Suburban Propane Gas Corp., Whippany, N. J., has recently acquired Natural Gas Co. of Hammon, N. J., and Fuelite Gas Corp. of Lexington, Mass., along with the affiliate companies, Yankee Bottled Gas Co. and Eastern Bottled Gas Co. "Nat Gas" operates seven bulk stations, which now gives Suburban an uninterrupted distribution area from Maine to South Carolina.

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Pictured in Rome, Italy, with the Coliseum in the background, is a White River Model 100 LPG tank truck made by White River Distributors, Batesville, Ark. Two similar trucks have recently been shipped to Ciudad Boliver, Venezuela. These truck models were developed as the result of experience of Preston W. Grace and associates in the operation of nine L. P. gas distributing plants in Arkansas.

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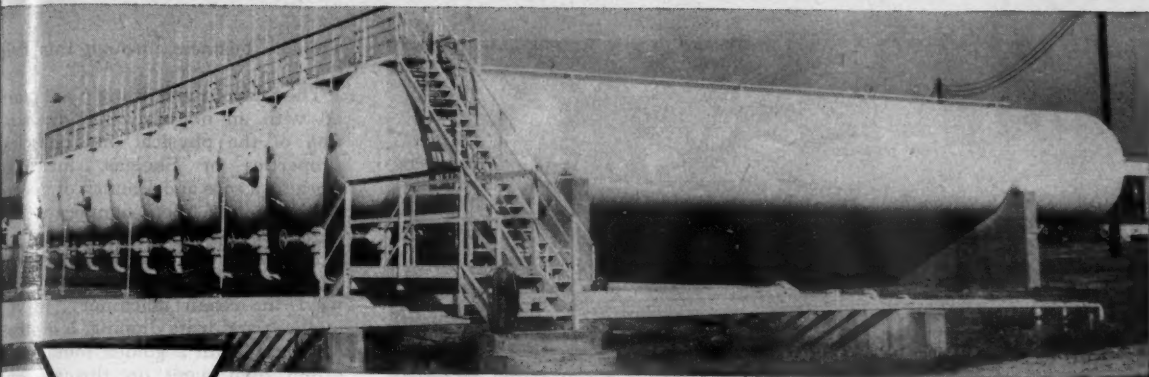
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Neat and Strong

...two good reasons for buying LP-Gas Storage Tanks designed and built by Downingtown Iron Works. Exceptionally neat welds improve the appearance of your installation. Extra-strong welds—X-ray controlled for soundness—mean less maintenance, longer life. These advantages are the result of special welding techniques de-

veloped by Downingtown welding experts.

Construction meets all requirements of ASME and NBFU. Equipped with first-quality valves and fittings if desired. Foundation drawings supplied if required.

Capacities from 4,000 to 30,000 gallons (W.C.). Write for detailed specifications.

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LP-GAS CONTAINERS FROM ONE POUND TO 30,000 GALLONS



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from floor
to ceiling

Extra Warmth
from exclusive
Holly S-H-E*

Across the nation, **holly** serves the L. P. G. industry

Mfrs. of Famous Stubby Floor Furnaces

Factory Tested
for trouble-free use
with L. P. gases

No Loss of
Efficiency due
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From Miami to Vermont... and Alaska to Tijuana... the L. P. G. Industry is relying on Holly NarroWall recessed heaters for more warm air circulation and better heat distribution. The *Secondary Heat Exchanger (Pat. 2602441) adds to comfort by heating and discharging air drawn from floor level. No hot walls or foggy windows. Easily installed!



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Without obligation please send me complete facts about Holly NarroWall designed for L. P. gases.

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Comfort coach, put on the road by Lennox Furnace Co., has a movable "Lennie Lennox," who answers audience questions, and movable letters on the side so the coach can carry any dealer's name.

Lennox Furnace Puts Sales Story on Wheels

The Midwest division of Lennox Furnace Co., Marshalltown, Iowa, believes in taking the sales story to the customer. It has developed a unique traveling display unit known as the Lennox home comfort coach.

The comfort coach is now on tour of the Midwest territory, stopping for promotional purposes at towns where Lennox dealers are located.

The comfort coach is the size of a large passenger bus. A 17-ft show window is installed on each side. On display inside is a selection of Lennox comfort equipment, including heating and air conditioning equipment and examples of Perima-flo (perimeter) air handling. A turntable permits a Lennox year around air conditioner to be shown from all angles.

One of the features of the display is a mechanical Lennie Lennox, the company's cartoon character. Lennie's body, head, eyes and mouth move and he talks to the audience through a public address system. An operator with a microphone is stationed in the cab of the coach to operate Lennie. The system is designed to pick up comments and questions from the audience which Lennie Lennox can answer.

The coach also has facilities for showing motion pictures and film strips. It is all handled by a two-man crew.

Before the coach enters a town, the local Lennox dealer promotes its arrival through newspaper, direct mail and radio advertising. The dealer usually sponsors a contest in con-

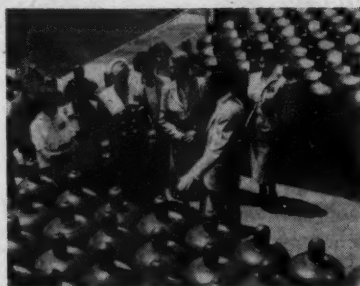
junction with the visit of the comfort coach. Removable letters on the sides of the coach carry the dealer's name and the name of the town. In this manner, the coach is "personalized" for each dealer.

The coach, painted in Lennox tan and brown, was put into operation in May. First reports indicated that, in towns visited by the comfort coach, the sale of Lennox equipment has been stimulated to a considerable degree.

Propane Performs for "Petroleum Peggies"

"Desk and Derrick," an organization of women who work in the petroleum industry, has a Kansas City chapter that knows about the growing propane business.

When the ladies asked for a tour of a propane installation, the Kansas City bottling plant of the Skelgas division of Skelly Oil Co. played host. More than 70 "Petroleum Peggies" gained a better understanding of the



"Petroleum Peggies" learn about propane cylinders at the Skelgas bottling plant in Kansas City, Mo.

propane business through this field trip.

The tour of the bottling plant started with an out-of-door demonstration of the physical and chemical properties of Skelgas, including freezing a rose and a bunch of grapes in the boiling, room temperature liquid gas.

A tour of the shops showed the various unique types of equipment used, the repair machinery, testing methods and brite dipping, a method of plating with a golden metal. The group then went on through the laboratory and service school.

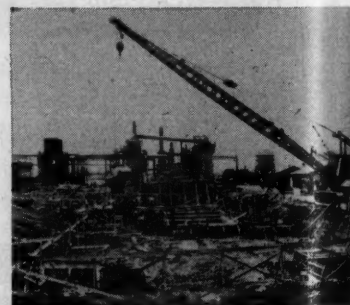
A Skelgas Constellation range was demonstrated to the visiting women. The range was partly disassembled for a look at its construction.

The final phase of the tour was a visit to the bottling and bulk plant where the ladies of "Desk and Derrick" were shown how the liquefied petroleum gas is handled when it is transferred from tank cars to cylinders and trucks for delivery to the consumer.

Tuscola Ammonia Plant Under Construction

Construction of a new ammonia plant, erected for National Distillers Products Corp., is underway at Tuscola, Ill. The plant will utilize a synthesis step, the main feature of which is a special quench-type reactor which allows optimum temperature control.

Since the catalyzed reaction between hydrogen and nitrogen re-



Laying of foundations got underway recently for a new ammonia plant at Tuscola, Ill.

quires a special temperature gradient for maximum conversion to ammonia, and since the reaction must be carried out at temperatures near those at which the catalyst deteriorates rapidly, close temperature control throughout the catalyst beds is a critical factor. The design of the Tuscola plant closely approaches the ideal arrangement for controlling the removal of heat from the converter.



Butane-Propane

POWER SECTION

INSTALLATION • CARBURETION • SERVICING



Aerial view of Pictsweet Food's Mt. Vernon, Wash., freezing plant and headquarters. Converted from a cannery in 1953, this plant produced over 5% of the nation's frozen peas during its first year of operation.

(For a story about Pictsweet Foods and its use of LPG fork lifts, turn to page 141.)



NEW INTERNATIONAL 220 Series, built with reserve power . . . weight saving, to sustain faster schedules with bigger payloads. Available with single or 2-speed axles, 5-speed direct or overdrive transmissions. Standard, sleeper or (shown) space-saver Comfo-Vision cabs. Wheelbases from 142 to 193 inches. GVW ratings, 26,000 to 30,000 lbs.

New High-Performance Standard!

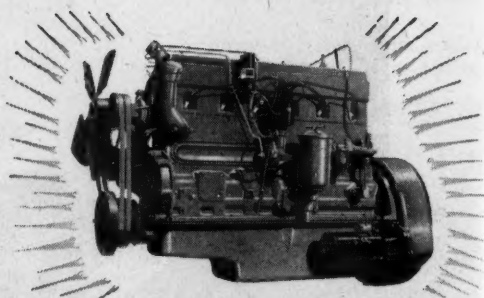
**INTERNATIONAL — 22-Year Heavy-Duty Sales Leader
Announces another great new truck series!**

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INTERNATIONAL is the No. 1 choice of cost-conscious heavy-duty operators year after year for good, solid reasons: Every INTERNATIONAL Truck is Tough Job engineered to take it — *all-truck* built with no compromises anywhere — built and balanced to do its job around the clock at extra low cost per mile.

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Newest and most powerful of the famous INTERNATIONAL built Red Diamond Engines! 501 cubic inch displacement—201 hp —430 lb-ft torque for maximum efficiency at low rpm—New precision-set, special alloy sleeve-

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"Standard of the Highway"

Propane Carburetion, Catalytic Exhaust Successful in Pictsweet Cold Rooms

• By John W. Taylor

CLYDE M. RUSHING, manager of the Albany, Ore., plant of Pictsweet Foods Inc. had a problem—and an idea. Now, it is not uncommon for a young man to have both a problem and an idea, but when the problem concerns gas fumes and the handling of “picked sweet” foodstuffs at zero and sub-zero temperatures, and the idea stirs many of the best minds in the propane and anti-fume businesses, it seems appropriate that the eventual solution be recorded.

When Pictsweet's new 250,000-cu ft Albany cold room was commissioned last spring, Mr. Rushing decided that he would keep the air in it as nearly pure as possible to keep his employes comfortable and to keep the quality of his foodstuffs commensurate with their name. But how could he move and stack the fruits, berries and vegetables without polluting the air and still stay within reasonable limits on expenditure for equipment?

Mr. Rushing considered continuing with the types of fork lifts previously used in his plant. These were gasoline-powered, using white gasoline for fuel, and equipped with OCM catalytic exhausts to decrease the output of carbon monoxide and eye and nose stinging fumes.

He also considered purchasing electrically operated lifts, but decided against them because of their price, the cost and bother of replacement batteries and recharging equipment, and the comparative slowness of their operation. Although not a speed demon, he felt that he had to have reasonable swiftness while moving his perishables from the place where they were processed to warehouses.

While mentally debating about gasoline and electricity, Mr. Rushing recalled that he had read that propane carburetion was economical and powerful, that it reduced lubricating oil and maintenance costs, that it presented no fuel storage problem and that its more complete combustion, compared with gasoline, materially reduced carbon monoxide output. For further information he called in a representative of Albany Propane Gas.

“Will propane operate an engine at temperatures from 8° below zero?” Mr. Rushing asked.

“Yes, it will, with liquid drawoff and induced vaporization of the fuel,” he was told.

“How much carbon monoxide does this propane throw off?”

“About three tenths of one percent.”



Lewis Powell Jr., operator of a propane powered fork lift with catalytic exhaust, stacks corn on the cob in Pictsweet's sub-zero Albany, Ore., warehouse.

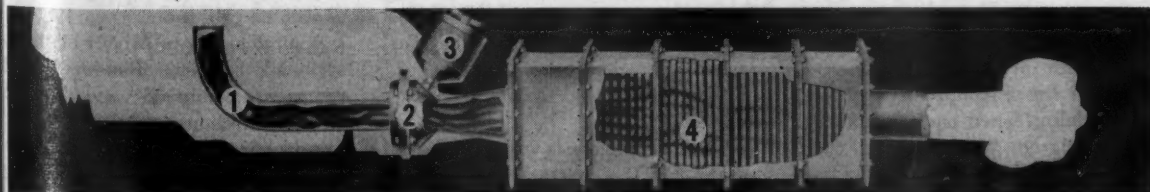
“Will it work with a catalytic exhaust?”

“Never heard of it ever being tried.”

“If it would . . .,” mused Mr. Rushing.

A catalytic exhaust is made to replace standard mufflers on automotive equipment. It consists of a connection to the engine exhaust manifold, a venturi or air inlet connected directly to the exhaust flange, an air filter and a series of catalytic units. A catalysis, which is a chemical change accelerated or retarded by a substance that remains stable, takes place in the catalytic exhaust.

Products of combustion in the en-



(1) Connection to engine exhaust manifold. The cubic inch displacement of the engine determines the number of catalytic units needed. (2) Venturi or air inlet connected directly to the exhaust manifold flange. This introduces fresh air into the exhaust gas stream to provide necessary oxygen. (3) Air filter used to filter the added fresh air, prevent contamination, and keep foreign matter from getting into the exhaust system. (4) Catalytic units kill carbon monoxide, harmful fumes, and odors. The catalytic exhaust is built so that it does not impose more back pressure than the standard muffler. A thermocouple connected with a pyrometer mounted on the instrument panel keeps a constant check on the efficiency of the catalyst.

gine are led away from the exhaust manifold and are mixed with air admitted by the venturi. The admitted air is filtered to prevent contamination and to keep foreign matter from entering the exhaust system. In the "muffler" catalytic units, numbered and sized according to the cu in. displacement of the engine, chemically burn out harmful unconsumed gases that have been given off by the engine. The units are made to give from 2000 to 2500 hours of service.

The day following the interview with the propane gas salesman, Walt Helin, Pictsweet's chief engineer, he arrived in Albany from Mt. Vernon, Wash., the company's home base. He

truck was selected as the first vehicle to be converted. After the engine head was planed to increase compression, Ensign carburetion, consisting of a No. 6257 filter, model R vaporizer and 1¼-in carburetor, was installed. A 30 water gal.-capacity Manchester mobile tank was mounted crosswise of the vehicle behind the driver's seat. The OCM catalytic exhaust system model C-4-91A completed the conversion. In the catalytic exhaust were five catalytic sections with a minimum effective life of 2000 hours.

Before the conversion, or even the signing of the order, a little drama had been enacted. Mr. Rushing asked

when the job was done. The Oregon state industrial accident commission was authorized to: (1) sample the exhaust of the Clark for carbon monoxide, (2) ventilate the warehouse and test the purity of its air, (3) run the engine in the closed warehouse for two hours and then for a total of eight hours, testing both exhaust and warehouse for carbon monoxide after each period.

After an anxious eight hours, the tester's reports were given—and received—with the enthusiasm that is born of new discoveries! They showed that working right in the exhaust stream would not be harmful and that the amount of carbon monox-



Cloud of steam in warehouse is ice crystals formed from water vapor in exhaust.

A fork lift truck, equipped with catalytic exhaust and Ensign carburetion, is used by Frozen Desserts Inc., a Pictsweet subsidiary in Los Angeles. Frozen Desserts uses a converted Buda fork lift in its -40° warehouse.

The propane installation and catalytic muffler function perfectly, according to Frozen Desserts. The cost of the Oxy-catalyst is \$230.



Engine compartment of fork lift used at Frozen Desserts Inc. in Los Angeles.

joined in a continuation of the discussion of the possibilities of propane carburetion and a catalytic exhaust. However, being an engineer, he wanted facts. He, Mr. Rushing, and the propane representative then began to telephone.

R. R. Wyker, Ensign Carburetor Co., Huntington Park, Calif., at first thought that his leg was being pulled when he was asked if his propane equipment would function with a catalytic exhaust at 8° below zero.

F. W. Commins, Calor Gas Co., San Francisco, was asked for data on fuel mixtures and exhaust products.

Chief Engineer Berton Karol, Oxy-Catalyst Manufacturing Co. Inc., Wayne, Pa., forwarded information.

Dr. Nathan Fasten, Oxypure Inc., Seattle, Wash., promised to cooperate on the project.

When the telephoning was done, Walt Helin leaned back in his chair and declared, "One thing is clear; Pictsweet and Albany Propane have assembled more information about propane carburetion and catalytic exhausts under cold storage conditions than anyone else in the country!"

A Clark 4000-lb capacity Hi-Lo lift

for a contract covering not only the conversion and propane gallonage costs, but also performance of the carburetion in conjunction with the catalytic exhaust. At the Albany Propane Gas office, partners Henry Tate and Kenneth Coykendall held a conference. Everything pointed toward efficient operation except the terrific difference between the 0° temperature in the warehouse and the approximate 450° temperature necessary in the muffler to liven up the catalyst. Finally Mr. Tate said, "Someone has to be first in a thing like this. Let's make the conversion and guarantee it!"

Mr. Coykendall directed, "Write into the contract that it will work satisfactorily."

"What is 'satisfactorily'?" he was asked.

"That will be up to Mr. Rushing," he replied.

The guarantee was written as paragraph 8 of the contract. The conversion was then made and a 500-gal. Buehler storage tank was installed on the Pictsweet premises.

Pictsweet's Mt. Vernon office decided to give paragraph 8 a real test

ide in the warehouse was only one tenth the allowable percentage!

Lewis Powel Jr., operator of the Clark, who drove it during the entire 1953 harvest and winter repacking seasons, states that negligible carbon monoxide and fume output can be maintained if the engine is worked where there is adequate ventilation until a "safe" reading is attained on the steering column dial that is furnished with the catalytic exhaust. During the warm-up the dial progresses from "danger" through "doubtful" to "safe" as the catalyst warms up. When "safe" is indicated, Mr. Powell knows his muffler is at about 450°, that the catalyst is active and that he can move into the un-ventilated cold room.

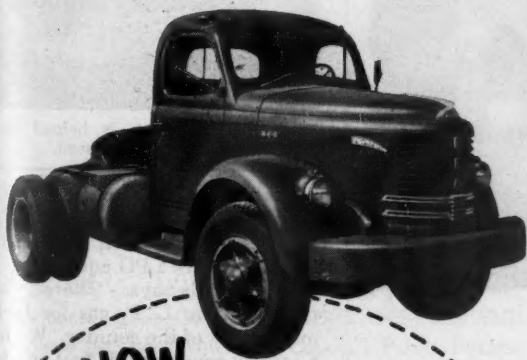
A summer day in Albany might occasionally reach 90°. Pictsweet's hold rooms are about 36° and the cold storage warehouse never exceeds 0°. The drastic temperature changes that the lift is subjected to in traveling into and out of these cold rooms apparently have no effect on the operation of the catalytic exhaust system or on the efficiency of the LPG engine.

What's wrong with this picture?

There are close shaves—and "close" shaves. Before YOU can convince customers that you can cut THEIR cost . . . you'd better demonstrate that you can cut your own. If you sell LP-Gas . . . haul it in LP-Gas powered trucks. You're hurting no one but yourself if you don't.

From Drawing Board on...REO trucks are built to take full advantage of LP-Gas characteristics

LP-Gas has characteristics and advantages all its own. REO Gold Comet LP-Gas engines are not just re-hashed gasoline engines, but engines built *specifically* for LP-Gas operation. As a result, you get the maximum economy out of this fuel. REO LP-Gas engines wring the last ounce of power out of every drop of fuel . . . establish unbelievable records of trouble-free, low cost maintenance.



NOW 3 Money-Saving Choices:

1. REO trucks with all the famous exclusive REO features and either 100-142 or 160 h.p. Gold Comet LP-Gas engines.
2. A complete Gold Comet LP-Gas engine to replace the old tired engine in your present trucks.
3. REO factory engineered complete Kits provide LP-Gas advantages to the OH160, 331 and 255 REO gasoline engines.

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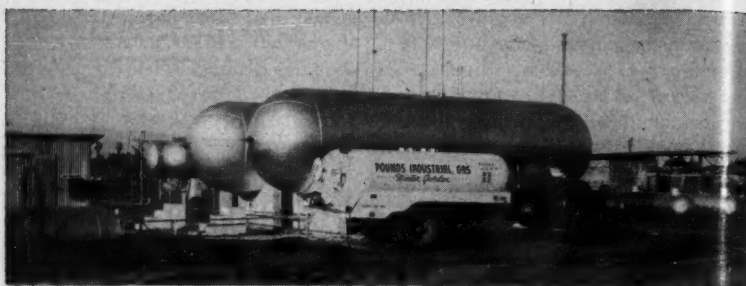


Pounds Promotes LPG As Farm Fuel

Pounds Motor Co., the Case dealership at Winter Garden, Fla., has done a great deal to introduce and to promote the use of LPG as a farm fuel in its area. Most of the firm's tractor sales are LPG-equipped tractors.

Hoyle Pounds has succeeded so well with L. P. gas tractors that he has organized a company to sell the fuel. He sold over a million gallons in 1953.

Mr. Pounds, constantly busy converting tractors, delivers direct and



L. P. gas bulk plant belonging to Pounds Motor Co. in Winter Garden, Fla.

restricts his business very largely to farmers.

When asked why he was in favor of L. P. gas as fuel, Mr. Pounds stated these advantages:

1. More power than with distillate.
2. Cheaper to use. (At the time wholesale price of diesel fuel was 18 cents; fuel oil 16.4 to 16.7 cents; gasoline from 26½ to 27 cents, while LPG was 14 cents.)
3. Engine will run twice as long without overhauling when LPG fuel is used. If the prospect doubts this, Mr. Pounds offers to give him a written guarantee.
4. Maintenance. It requires less oil, fewer spark plugs, less maintenance care and in every way is a much better tractor than one that operates on low cost fuel.

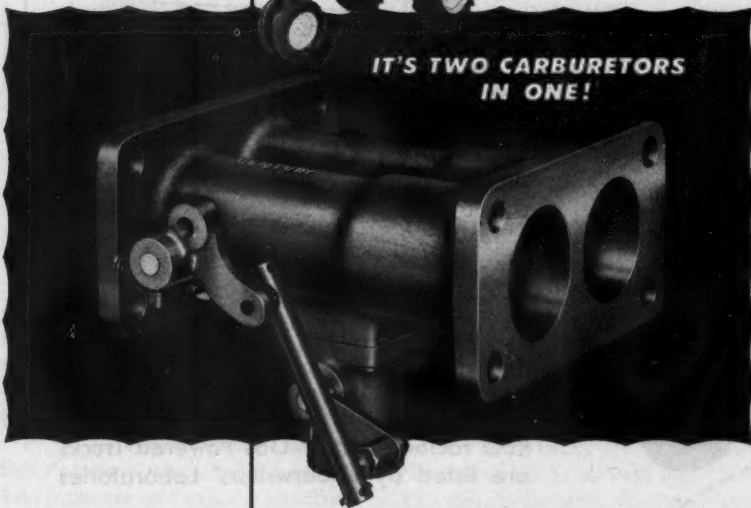
Completely new METERING VALVE TYPE **CENTURY** DUAL CARBURETOR

BUILT
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IT'S TWO CARBURETORS
IN ONE!



NOT AFFECTED BY...

- ...temperature changes
- ...high or low altitudes
- ...changing gas pressures

BALANCES POWER of each cylinder.

GIVES BETTER fuel economy.

PERFORMS AT ALL speeds to pre-set perfection.

IDLES PERFECTLY.

GIVES INSTANT power—no choking or fluttering.

STARTS INSTANTLY upon installation.

NO MULTIPLE ADJUSTMENTS—tune up only.

Write for complete information today!

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CENTURY

- ★ SET IT!
- ★ SEAL IT!
- ★ FORGET IT!



LP-GAS CARBURETION



Hoyle Pounds, right, is helped by his sons Herbert, left, and Russell.

Of the last 30 Model "DO" Case tractors sold by Mr. Pounds, only one was sold to operate on low cost fuel, all others were LPG equipped.

Mr. Pounds says: "There is a lot of interest in L. P. gas for fuel in many parts of the country. We have a catalog covering this fuel and tractors constructed to operate on it, which was prepared to help you sell this equipment. If you do not have copies for your use, see your territory supervisor and push the sale in your territory if LPG is available."

The above was adapted from the June-July issue of the "Case Eagle," published by J. I. Case Co. We call your attention particularly to the last sentence of the last paragraph. This is the official voice of the J. I. Case Co. asking its tractor dealers to cooperate with the local LPG distributors. We suggest that it will be profitable for you to get acquainted with and cooperate with your local Case dealer.—Ed.



For Exceptional Service to Safety

On May 5, 1954, the National Safety Council announced from Chicago that BUTANE-PROPANE News had been voted the Council's Public Interest Award for 1953 . . . "for exceptional service to safety" in publishing the BPN Safety Program — Carl Abell's widely acclaimed safety training articles, which have appeared each month since February 1953.

Official presentation of the award was made June 21, 1954. In the photograph you see Editor Carl Abell accepting the award for BUTANE-PROPANE News from President Lloyd Van Aken (left) of the Greater Los Angeles Chapter, and Earl Campbell (right) western representative of the National Safety Council.

Other awards made this year to BUTANE-PROPANE News and to Editor Carl Abell include Certificates of Meritorious Achievement from the Pan American

Casualty and Insurance Companies, and the Man of the Year award to Mr. Abell by Western Liquid Gas Association.

LPG operators have expressed their own approval of this outstanding editorial service many times, in their own way . . . by voting B-P News their first choice of LPG publications, in every independent reader survey made by advertisers.

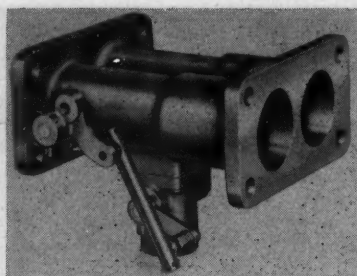
And advertisers have accepted these votes of confidence as the true measure of B-P News' standing with the industry, by using more advertising pages in B-P News every year for 13 straight years, than they have used in any other LPG publication. "Advertising STAYS when advertising PAYS." BUTANE-PROPANE News, 198 S. Alvarado Street, Los Angeles 57, California.

Power Products

To secure further information on these products, refer to coupon on page 97.

18. Carburetor

A new, improved, double barreled L. P. gas carburetor for all John Deere tractor models is announced by Century Gas Equipment Co. This new model is a complete departure



from the Century carburetor now furnished as factory equipment on John Deere LPG tractors.

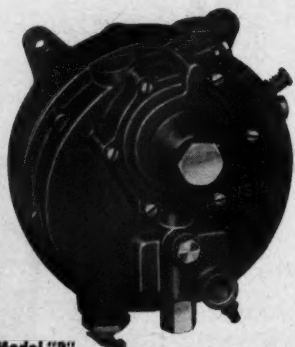
Two complete carburetors are com-

bined in one so that each has a completely independent metering valve, spraybar injection system and butterfly valve. Thus each cylinder receives a perfectly proportional mixture of gas and air in positively equal proportions. It is no longer possible for one cylinder to be overloaded at any power range, which has been a problem in the past.

This carburetor is calibrated exactly to the tractor and gives maximum economy and power at all loads and conditions. Only one adjustment for tuning is required. Metering valve assembly is equipped with sealed precision ball bearings. All working parts are completely dust sealed. This carburetor is not sensitive to temperature changes, atmospheric conditions or malfunctions of the regulator. It assures perfect idling, easy starting and smooth acceleration.

Century Gas Equipment Co.

1. LOWER FUEL COSTS
2. INCREASED ENGINE POWER
3. LONGER LUBE OIL LIFE
4. GREATER ENGINE TORQUE MORE LUGGING POWER
5. LESS ENGINE MAINTENANCE — FEWER OVERHAULS
6. SMOOTH RUNNING ENGINE—NO VIBRATION—NO PING
7. ENSIGN CARBURETORS ARE EASY TO START, EASY TO ADJUST



Model "R" Vaporizer-Regulating Unit

LP-Gas Operation At Its Best

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*Superior in Performance
Nationally accepted*



Model "Xs" Gas Carburetor



Model "Kgni" Combination Gasoline and LP-Gas Carburetor



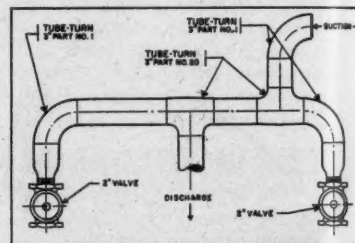
LP-Gas Filter

When you convert a gasoline tractor or an industrial engine to LP-Gas you show the owner a handsome profit. Furthermore, with Ensign Carburetion you improve the operation of his tractor, reduce his operating expense and make him a real friend. When you convert an engine to LP-Gas insist on Ensign equipment and assure yourself and the customer that the carburetion you use is the best at any price. Leading tractor manufacturers have adopted Ensign for their popular LP-Gas models. Get all the facts from Ensign, the pioneer in LP-Gas carburetion. More tractor conversions are made using Ensign than any other make. Ensign factory representatives will be glad to consult with you.

ENSIGN CARBURETOR COMPANY

7010 SOUTH ALAMEDA ST., P. O. BOX 229, HUNTINGTON PARK, CALIF.
Branch Factory: 2330 West 58th Street, Chicago 36, Illinois

19. Improved Manifold



An improved suction and discharge manifold has been announced for tank trucks making deliveries of propane and butane. The manifold's directional changes are made with welding fittings, rather than with screwed fittings, which sometimes fail and create hazards.

The design calls for three 3-in. elbows and two 3-in. barrel-shaped tees. These make possible joints that remain permanently drum-tight under the vibration stresses imposed by road conditions. Pressure drop is also minimized.

Tube Turns

20. Thermostatic Control

To meet the need for a practical and inexpensive means of overcoming loss of power and economy in LPG-equipped engines due to fluctuating fuel temperature, Dix Manufacturing Co. has introduced the Dix LPG vigorator. Operating by means of a thermostat at the water outlet of the regulator to prevent water from leaving until it is down to the predetermined temperature, the vigorator prevents preheating and expansion

of the vaporized butane or propane in the regulator.

According to R. W. Adair, president of Dix Manufacturing Co., the temperature of fuel leaving an unthermostated regulator varies through a wide range as the power output and speed of the engine change, thus producing variable mixture ratios as the vehicle goes through traffic, climbs long grades, or operates on hot days. An increase of 50° in fuel temperature may lean the mixture out as much as 10%.

Thus a carburetor adjustment set in the shop for a perfect power mixture of 13:1 may lean out to 14.3:1 on a sustained pull, or even more if the fuel temperature increases a few additional degrees. This gives the familiar loss of power that has so often been noted under these conditions, and also results in loss of economy.

Test experience of Dix engineers over the past five years shows that these losses do not occur if the fuel mixture is held to a constant low temperature. Conventional regulator design, with uncontrolled flow of water, heats the fuel most when the demand for power is greatest, as in pulling up a long grade, according to Mr. Adair, who adds that for ideal operation there should be just enough heat admitted to the heat exchanger to vaporize the fuel and hold it at the predetermined low temperature.

This is accomplished with the vigorator, which requires the vaporizing fuel to cool the water instead of allowing the water to heat the fuel.

The vigorator is designed with standard pipe threading for convenient installation at the water outlet of any make of regulator. The thermostatic element is of the non-pulsating type to give long life, accurate control, and silent operation. All materials used in the construction are non-corroding. The entire assembly is only about as large as an old-fashioned pocket watch, and weighs 11 oz.

21. LPG in Mobile Homes

A "How-to-do-it" book for all house trailer owners, the "Mobile Home Manual," has recently been published by the Trail-R-Club of America. The 197-page manual contains many photographs and illustrations and much valuable information for the mobile home owner.

A section "Facts About and Safety Rules for Butane and Propane Systems" discusses the LPG system—storage tank, tank valve, regulator, and piping—how the system works, how to determine if something is wrong and if so, what to do about it.

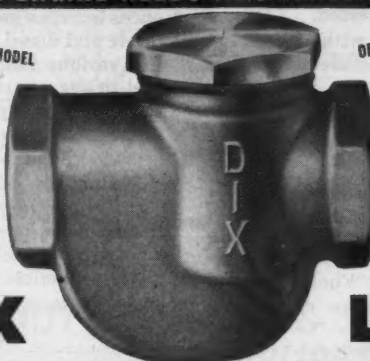
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L. P. gas refrigerators, lights, room heaters and hot water heaters are treated also. AGA approval for all gas appliances is stressed.

The section closes with a check list of safety rules for the use of L. P. gas in mobile homes.

The cost of the manual is \$1.98.

Trail-R-Club of America

22. Fuel System Booklet

In non-technical language with a simple chart and rules easy to understand, the booklet "Fuel-Wise" explains the comparative advantages

of different types of fuel for tractors and power units.

"Fuel-Wise" discusses the differences between gasoline, L. P. gas, distillate and diesel fuel systems. It lists the various items of cost: varying fuel prices, yearly hours of use, initial cost of equipment, overhead expenses of maintenance, insurance, depreciation and taxes.

Basing his calculations on these cost factors, the prospective buyer of a tractor or power unit can figure what type of fuel and engine will be most economical in his own area.

Minneapolis-Moline Co.

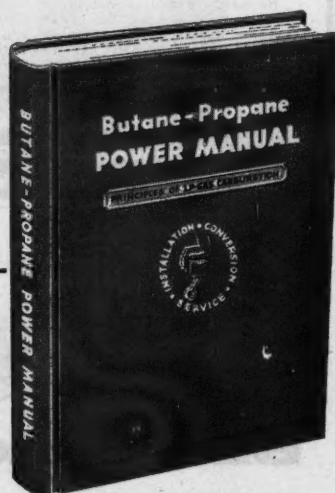
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Butane-Propane POWER MANUAL

Second Printing — Nov. 1953
With Revisions

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Here is the first authoritative guide ever published for the rapidly expanding LPG power market. Basic facts of engines, fuel, and power are given in easy-to-understand language; then careful directions and clear illustrations take you step-by-step through installations, conversions, servicing . . . everything needed in a practical working manual for practical men. Nearly 5,000 copies of the BUTANE-PROPANE POWER MANUAL have already been sold.

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BUTANE-PROPANE News, 198 S. Alvarado St., Los Ang. 57, Cal.

Underwriters' Lab Approves LPG Fork Truck

Underwriters' Laboratories has granted its first approval and listing for a fork-lift truck powered by liquefied petroleum gas to Clark Equipment Co.'s Carloader model machine, it was announced recently by W. E. Schirmer, vice president.

The LPG-Carloader is a standard model fork truck in 3000 to 5000-lb capacities, equipped with conventional, Dynatork or Hydratork transmission, factory-modified for LPG operation. Installation of a compact, field-tested "fuel unit" and relatively minor engine changes adapt the gasoline-powered fork truck for LPG.

"Industry has long recognized the desirability of LPG-powered fork-lift trucks, especially for indoor operations," Mr. Schirmer said. "Warehousemen have frequently objected to the irritating exhaust fumes from



gasoline-powered machines. With LPG, the fumes, if any, are colorless and odorless.

"Widespread application of LPG for fork trucks was delayed until a system could be devised that would meet Underwriters' Laboratories' standards of operational reliability and safety. The fact that the Carloader has met UL requirements should give great impetus to wider use of LPG-powered fork trucks."

The fuel unit developed by Clark consists of a heavy-duty fuel tank, vaporizer-regulator and a simple, rugged air-gas carburetor. The system draws fuel from the tank in liquid form and it is vaporized before it reaches the manifold. This means that even in extremely cold weather, there is little difficulty in starting, it is claimed. With a vapor system—a system where fuel is drawn from the top of the fuel tank as a vapor—starting difficulties in cold weather are common because of reduced vaporization in the tank.

Since the fuel is under its own

pressure at all times in the tank, the need for a fuel pump is eliminated. A solenoid valve automatically opens or closes the fuel line by the ignition switch, and serves as a positive lock-off when the engine is stopped. As another safety precaution, a vacuum switch has been placed between the ignition and the manifold, which prevents fuel from being drawn into the engine until the engine is turned over.

The engine is modified to operate at a high compression ratio (8 to 1) to take better advantage of LPG's higher octane rating and to provide maximum efficiency, fuel economy and engine power. Also, a cold intake manifold is used, since the fuel is already a gas when it enters the manifold and does not require a hot spot as does gasoline.

To provide longer engine life, steel-faced valves and seats and positive valve rotators are used in the LPG-Carloader engine, the manufacturer reports. These are desirable, it is claimed, because the higher compression used with LPG exposes the valves to higher flame temperature.

To refuel the LPG-Carloader, the fuel tank is removed in a matter of minutes and simply hooked to the LPG storage unit and the fuel is pumped in; a hand pump can also be used effectively. Spare tanks are available if it is desired to keep a stand-by full tank. The fuel tank is rated at 1600 lb pressure.

L. P. gas Gains Favor As Bus Fuel

Buses operating on liquefied petroleum gas reached a new peak of 1663 during 1953, according to a report of the Liquefied Petroleum Gas Association. This was a gain of 16% over 1952.

The figures were obtained in a survey conducted by the LPGA market research committee headed by A. F. Smith of A. O. Smith, Milwaukee. Thirty bus lines participated in the survey.

LPGA reported that 411 additional buses were on order and were expected to be put in operation at the end of 1954, boosting the number of L. P. gas-operated buses to over 2000.

Opinions of bus operators showed a more definite acceptance of LPG. This was a change over 1952, when a few operators expressed some indecision as to operation of LPG buses. It is felt that "know how" and utilization of the advantages of L. P. gas accounts for the uniform acceptance of LPG as motor fuel.



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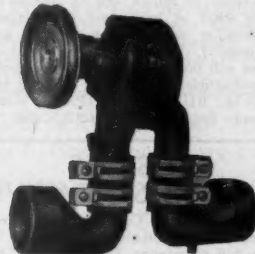
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WANTED: TECHNICAL WRITER — We need a technical trained man under 35 for the editorial staff of BUTANE-PROPANE News. He should have a background of mechanical engineering and experience in LPG or Gas operations—with emphasis on equipment. He should be able to write clearly and cleanly and have done some work in preparing reports. He should have an inquisitive mind and like to probe into the "Why" of things, and be able to explain to others what he has found out. Experience in magazine or newspaper production as well as photography is desirable, but not essential. Duties will include field trips to gather data for original articles. Application by letter only. Send details to: BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

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TRINITY'S NEW EXCLUSIVE MODEL #106 with sectional skirting - 1700 WG capacity W-250 - ICC MC-330 complete with pump, printometer, remote Okadee valves, clutch, power take-off and throttle. Completely installed on new factory LPG powered RP-162 International chassis. Immediate delivery, \$5,100.00 F.O.B. Trinity Steel Co., Inc., 3301 S. Lamar St., Hunter 8321, Dallas, Texas.

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FOR SALE—TRUCKS-TRAILERS - Cont.

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FOR THE BIG HAUL . . . NEW 1800 WG U-69 NOR-TEX twin delivery unit. Equipped for service with trim skirting, 50-gallon recessed fuel tank, ICC lights, Viking mechanical seal pump, P.T.O. and splines jack shaft. Mounted on brand new factory LPG powered International RP-172 chassis with the big 282 LPG engine. 5th overdrive transmission, two speed axle, 9:00 tires all around, heavy duty rear springs. All ready to start delivering gas for only \$5,125.00, including taxes, F.O.B. Denton. Call **NOR-TEX PRODUCTS COMPANY** collect, C-5416, Denton, Texas. **WANTED — 1 USED BUTANE-PROPANE tank trailer,** 3000 to 4000 gal. capacity. Quote price and location. **Hysan Products Co.,** 932 W. 38th Pl., Chicago 9, Ill.

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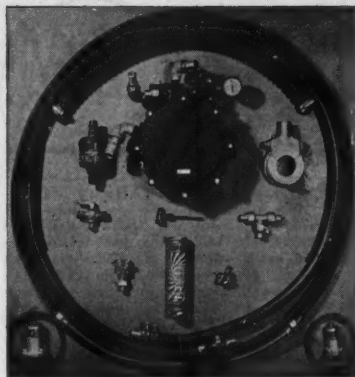
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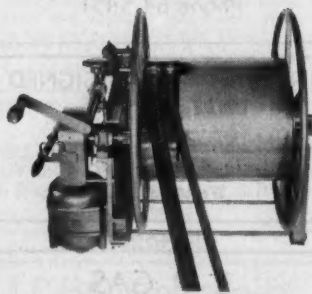
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